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**[0024]** Music and speech audio reproduction levels in vehicles and ambient sound levels are antagonistic. For example, vehicle operators typically play vehicle audio devices louder to hear over the traffic and general urban noise. The same applies to voice communication.

**[0025]** Automotive vehicle operators are often auditorially removed from their external ambient environment. For example, high sound isolation from the external environment may be provided by cabin structural insulation, close-fitting window seals and thick or double paned glass. Ambient sound cues (from external acoustic signals), such as oncoming emergency (and non-emergency) vehicle sound alerts; vocal messages from pedestrians; and sounds generated by the operator's own vehicle may often not be heard by the vehicle operator.

**[0026]** To summarize, the reduced "situation awareness" of the vehicle operator may be a consequence of at least two principle factors. One factor includes acoustic isolation of the vehicle cabin (e.g., from the vehicle windows and structural isolation). A second factor includes sound masking. The sound masking may include masking from internal cabin noise (such as from engine and road noise) and masking from loud music reproduction levels within the vehicle. The masking effect may be further compounded with telephone communications, where the vehicle operator's attention may be further distracted by the conversation. Telephone conversation, thus, may introduce an additional cognitive load that may further reduce the vehicle operator's auditory situation awareness of the vehicle surroundings.

**[0027]** The reduction of the situation awareness of the vehicle operator may lead to danger. For example, a personal safety of the vehicle operator may be reduced. In addition, personal safety of other vehicle operators and pedestrians in the vicinity of the vehicle may also be threatened.

**[0028]** One definition of situation awareness includes "the perception of elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future". While some definitions are specific to the environment from which they were adapted, the above definition may be applicable across multiple task domains from visual to auditory modalities.

**[0029]** A method and system is herein disclosed to address this problem of reduced auditory situation awareness of vehicle operators. In an exemplary embodiment, ambient warning sounds in the vicinity of a vehicle may be automatically detected and may be actively reproduced in the vehicle cabin, to inform the vehicle operator of detected sounds. According to an exemplary embodiment, a library of known warning sounds may be acquired automatically based on the vehicle's location.

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**[0030]** Personal safety of the vehicle operator and passengers in the vehicle may thereby enhanced by exemplary systems and methods of the present invention, as described herein. Accordingly, the safety of other vehicles (such as oncoming emergency vehicles, other motorists, and pedestrians) may also be increased. The safety benefit comes not only from the enhanced auditory situation awareness, but also via reduced driver workload. For example, the system may reduce the burden on the driver to constantly visually scan the environment for emergency vehicles or other dangers that may also have recognizable acoustical signatures (that may ordinarily be inaudible inside the vehicle cabin).

**[0031]** One focus of the present invention is to enhance (i.e., increase) the auditory situation awareness of a typical vehicle operator and, thereby, improve the personal safety of the vehicle operator, and other motorists and pedestrians.

**[0032]** Referring to FIG. 1, a pictorial diagram of vehicle 102 including an exemplary automotive sound recognition system (ASRS) 100 for enhanced auditory situation awareness is shown. ASRS 100 may include user interface 106, central audio processor system 114 (also referred to herein as processor 114), indicator 116 and at least one loudspeaker (for example, right loudspeaker 112 and left loudspeaker 120) (also referred to herein as vehicle cabin receivers (VCRs) 112, 120). ASRS 100 may also include one or more ambient microphones (for example, right microphone 104, front microphone 108, rear microphone 110 and left microphone 122) for capturing ambient sound external to vehicle 102. ASRS 100 may also include at least one vehicle cabin microphone (VCM) 118 for capturing sound within vehicle cabin 126.

**[0033]** Processor 114 may be coupled to one or more of user interface 106, indicator 116, VCRs 112, 120, VCM 118 and ambient microphones 104, 108, 110, 122. Processor 114 may be configured to control acquisition of ambient sound signals from ambient microphones 104, 108, 110, 122 and (optionally) a cabin sound signal from VCM 118. Processor 114 may be configured analyze ambient and/or cabin sound signals, and to present information by system 100 to vehicle operator 124 (such as via VCRs 112, 120 and/or indicator 116) responsive to the analysis.

**[0034]** In operation, processor 114 may be configured to receive AC signal 107 and reproduce AC signal 107 through VCRs 112, 120 into vehicle cabin 126. Processor 114 may also be configured to receive ambient sound signals from respective ambient microphones 104, 108, 110, 122. Processor 114 may also be configured to receive a cabin sound signal from VCM 118.

**[0035]** Based on an analysis of the ambient sound signals (and, optionally, the cabin sound signal), processor 114 may mix the ambient sound signal from at least one of ambient microphones 104, 108, 110, 122 with AC signal 107. The mixed signal may be

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output to VCRs 112, 120. Accordingly, acoustic cues in the ambient signal (such as an ambulance siren, a vocal warning from a pedestrian, or a vehicle malfunction sound) may be passed into vehicle cabin 126, thereby providing detectable and spatial localization cues for vehicle operator 124.

**[0036]** AC signal 107 may include any audio signal provided to (and/or generated by) processor 114 that may be reproduced through VCRs 112, 120. AC signal 107 may correspond to (without being limited to) at least one of the following exemplary signals: a music or voice audio signal from a music audio source (for example, a radio, a portable media player, a computing device); voice audio (for example, from a telephone, a radio device or an occupant of vehicle 102); or an audio warning signal automatically generated by vehicle 102 (for example, in response to a backup proximity sensor, an unbelted passenger restraint, an engine malfunction condition, or other audio alert signals). AC signal 107 may be manually selected by vehicle operator 124 (for example, with user interface 106), or may be automatically generated by vehicle 102 (for example, by processor 114).

**[0037]** Although in FIG. 1, two loudspeakers 112, 120 are illustrated, ASRS 100 may include more or fewer loudspeakers. For example, ASRS 100 may have more than two loudspeakers for right, left, front and back balance of sound in vehicle cabin 126. As another example, ASRS 100 may include five loudspeakers (and a subwoofer) for 5.1 channel surround sound. It is understood that, in general, ASRS 100 may include one or more loudspeakers.

**[0038]** User interface 106 may include any suitable user interface capable of providing parameters for one or more of processor 114, indicator 116, VCRs 112, 120, VCM 118 and ambient microphones 104, 108, 110, 122. User interface 106 may include, for example, one or more buttons, a pointing device, a keyboard and/or a display device.

**[0039]** Processor 114 may also issue alerts to vehicle operator 124, for example, via indicator 116. Indicator 116 may provide alerts via a visual indication, an auditory indication (such as a tonal alert) and/or a haptic indication. Indicator 116 may include any suitable indicator such as (without being limited to): a display (such as a heads-up display), a loudspeaker or a haptic transducer (for example, mounted in the vehicle's steering wheel or operator seat)..

**[0040]** In an exemplary embodiment, processor 114 may also use ambient microphones 104, 108, 110, 122 and/or VCM 118 and VCRs 112, 120 to cancel a background noise component (such as road noise) in vehicle cabin 126. For example, the noise cancellation may be centered at the position of vehicle operator 124.

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**[0041]** Ambient microphones 104, 108, 110, 122 may be positioned on vehicle 102 (for example, on an exterior of vehicle 102 or any other suitable location) such that ambient microphones 104, 108, 110, 122 may transduce sound that is external to vehicle 102. In general, ambient microphones 104, 108, 110, 122 may be configured to detect specific sounds in a vicinity of vehicle 102. Although four ambient microphones 104, 108, 110, 122 are illustrated in the positions (i.e., front, right, left and rear of vehicle 102) shown in FIG. 1, in general, system 100 may include any number of microphones and at least one ambient sound microphone. An ambient sound signal (from one or more of ambient microphones 104, 108, 110, 122) may also be mixed with AC signal 107 before being presented through at least one cabin loudspeaker 112, 120.

**[0042]** According to an exemplary embodiment, processor 114 may determine a sound pressure level (SPL) of vehicle cabin 126 (referred to herein as the cabin SPL) by analyzing a signal level and signal gain reproduced with at least one of loudspeakers 112, 120, and the sensitivity of respective loudspeakers 112, 120. In another exemplary embodiment, processor 114 may determine the cabin SPL via VCM 118. Use of VCM 118 may allow consideration of other sound sources in vehicle cabin 126 (i.e., other than sound sources contributed by loudspeakers 112, 120), such as an air conditioning system, and sound from other passengers in vehicle 102.

**[0043]** ASRS 100 may be coupled to a remote location (not shown), for example, by wireless communication. Information collected by ASRS 100 may be provided to the remote location (such as for further analysis).

**[0044]** Referring to FIG. 2, a block diagram of ASRS 100 in accordance with an exemplary embodiment is shown. As illustrated, the ASRS 100 can include processor 114 operatively coupled to the Ambient Sound Microphone (ASM) 201, one or more VCRs 112, 120, and VCM 118 via one or more Analog to Digital Converters (ADC) 202 and Digital to Analog Converters (DAC) 203. In FIG. 2, ASM 201 may represent one or more of ambient microphones 104, 108, 110, 122 shown in FIG. 1. ASRS 100 can include an audio interface 212 operatively coupled to the processor 114 to receive AC signal 107 (for example, from a media player, a cell phone, voice mail), and deliver the AC signal 107 to the processor 114.

**[0045]** The processor 114 may include sound signature detection block 214 and may monitor the ambient sound captured by the ASM 201 for warning sounds in the environment, such as an alarm (e.g., bell, emergency vehicle, security system, etc.), siren (e.g., police car, ambulance, etc.), voice (e.g., "help", "stop", "police", etc.), or specific noise type (e.g., breaking glass, gunshot, etc.). The memory 208 can store sound signatures for previously learned warning sounds to which the processor 114 refers for detecting warning sounds. The sound signatures can be resident in the

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memory 208 or downloaded to processor 114 via the transceiver 204 during operation as needed. Upon detecting a warning sound, the processor 114 can report the warning to the vehicle operator 124 (also referred to herein as user 124) via audio delivered from the VCRs 112, 120 to the vehicle cabin.

**[0046]** The processor 114 responsive to detecting warning sounds can adjust the audio content signal 107 and the warning sounds delivered to the vehicle cabin 126. The processor 114 can actively monitor the sound exposure level inside the vehicle cabin 126 and adjust the audio to within a safe and subjectively optimized listening level range. The processor 114 can utilize computing technologies such as a microprocessor, Application Specific Integrated Chip (ASIC), and/or a digital signal processor (DSP) with associated storage memory 208 such as Flash, ROM, RAM, SRAM, DRAM or other like technologies for controlling operations.

**[0047]** The ASRS 100 can further include a transceiver 204 that can support singly or in combination any number of wireless access technologies including without limitation Bluetooth™, Wireless Fidelity (Wi-Fi), Worldwide Interoperability for Microwave Access (WiMAX), and/or other short or long range communication protocols. The transceiver 204 can also provide support for dynamic downloading over-the-air to the ASRS 100. It should be noted also that next generation access technologies can also be applied to the present disclosure.

**[0048]** The power supply 210 can utilize common power management technologies such as replaceable batteries, supply regulation technologies, and charging system technologies for supplying energy to the components of the ASRS 100 and to facilitate portable applications. A motor (not shown) can be a single supply motor driver coupled to the power supply 210 to improve sensory input via haptic vibration (for example, via indicator 116 (FIG. 1) configured as a haptic indicator), e.g. connected to the vehicle steering wheel or vehicle operator chair. As an example, the processor 114 can direct the motor to vibrate or pulse responsive to an action, such as a detection of a warning sound or an incoming voice call.

**[0049]** FIG. 3 is a flowchart of a method 300 for vehicle ambient sound monitoring and warning detection in accordance with an exemplary embodiment. The method 300 can be practiced with more or fewer than the number of steps shown and is not limited to the order shown. To describe the method 300, reference will be made to components of FIG 2 , although it is understood that the method 300 can be implemented in any other manner using other suitable components.

**[0050]** As shown in step 302, the processor 114 can monitor the environment for warning sounds, such as an alarm, a horn, a voice, or a noise. Each of the warning sounds can have certain identifiable features that characterize the sound. The features

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can be collectively referred to as a sound signature which can be used for recognizing the warning sound. As an example, the sound signature may include statistical properties or parametric properties of the warning sound. For example, a sound signature can describe prominent frequencies with associated amplitude and phase information. As another example, the sound signature can contain principal components identifying the most likely recognizable features of a warning sound.

**[0051]** At step 304, the processor 114 may detect the warning sounds within the environment based on the sound signatures. As described below, feature extraction techniques may be applied to the ambient sound captured at the ASM 201 to generate the sound signatures. Pattern recognition approaches may be applied based on known sound signatures to detect the warning sounds from their corresponding sound signatures. More specifically, sound signatures may be compared to learned models to identify a corresponding warning sound.

**[0052]** At step 306, the processor 114 may adjust sound delivered to the vehicle cabin 126 in view of a detected warning sound. Upon detecting a warning sound in the ambient sound of the user's environment, the processor 114, at step 308, may generate an audible alarm within the vehicle cabin 126 that identifies the detected sound signature.

**[0053]** The audible alarm can be a reproduction of the warning sound, an amplification of the warning sound (or the entire ambient sound), a text-to-speech message (e.g., synthetic voice) identifying the warning sound, a haptic vibration via indicator 116 (configured as a haptic indicator), or an audio clip. For example, the processor 114 can generate a sound bite (i.e., audio clip) corresponding to the detected warning sound such as an ambulance, fire engine, or other environmental sound. As another example, the processor 114 can synthesize a voice to describe the detected warning sound (e.g., "ambulance approaching"). At step 310, processor 114 may send a message to a mobile device identifying the detected sound signature (e.g., "alarm sounding").

**[0054]** FIG. 4 illustrates system modes of ASRS 100 in accordance with an exemplary embodiment. The system mode may be manually selected by user 124, for example, by pressing a button; or automatically selected, for example, when the processor 114 detects it is in an active listen state or in a media state. As shown in FIG. 4, the system mode can correspond to Signature Sound Pass Through Mode (SSPTM), Signature Sound Boost Mode (SSBM), Signature Sound Rejection Mode (SSRJM), Signature Sound Attenuation Mode (SSAM), and Signature Sound Replacement Mode (SSRM).

**[0055]** In SSPTM mode, ambient sound captured at the ASM 201 is passed transparently to the VCRs 112, 120 for reproduction within the vehicle cabin 126. In this

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mode, the sound produced in the vehicle cabin 126 sufficiently matches the ambient sound outside the vehicle cabin 126, thereby providing a "transparency" effect. That is, the loudspeakers 112, 120 in the vehicle cabin 126 recreate the sound captured at the ASM 201. The processor 114, by way of sound measured at the VCM 118, may adjust the properties of sound delivered to the vehicle cabin 126 so the sound within the occluded vehicle cabin 126 is the same as the ambient sound outside the vehicle 102.

**[0056]** In SSBM mode, warning sounds and/or ambient sounds are amplified upon the processor 114 detecting a warning sound. The warning sound can be amplified relative to the normal level received, or amplified above an audio content level if audio content is being delivered to the vehicle cabin 126.

**[0057]** In SSRJM mode, sounds other than warning sounds may be rejected upon the processor 114 detecting a specific sound signature. The specific sound can be minimized relative to the normal level received. In SSAM mode, sounds other than warning sounds can be attenuated. For example, in both SSRJM and SSAM modes, annoying sounds or noises not associated with warning sounds can be suppressed. For instance, by way of a learning session, the user 124 can establish which sounds are considered warning sounds (e.g., "ambulance") and which sounds are considered non-warning sounds (e.g., "jackhammer"). The processor 114 upon detecting non-warning sounds can thus attenuate or reject these sounds within the vehicle cabin 126.

**[0058]** In SSRM mode, warning sounds detected in the environment can be replaced with audible warning messages. For example, the processor 114, upon detecting a warning sound, can generate synthetic speech identifying the warning sound (e.g., "ambulance detected"). In such regard, the processor 114 may audibly report the warning sound identified, thereby relieving the user 124 from having to interpret the warning sound. The synthetic speech can be mixed with the ambient sound (e.g., amplified, attenuated, cropped, etc.), or played alone with the ambient sound muted.

**[0059]** FIG. 5 is a flowchart of a method 500 for sound signature detection in accordance with an exemplary embodiment. The method 500 can be practiced with more or fewer than the number of steps shown and is not limited to the order shown. To describe the method 500, reference will be made to components of FIG 2, although it is understood that the method 500 can be implemented in any other manner using other suitable components.

**[0060]** The method can start at step 502, in which the processor 114 can enter a learn mode. Notably, the processor 114 upon completion of a learning mode or previous learning configuration can start instead at step 520. In the learning mode of step 502, the processor 114 can actively generate and learn sound signatures from ambient sounds within the environment. In learning mode, the processor 114 can also receive

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previously trained learning models to use for detecting warning sounds in the environment.

**[0061]** In an active learning mode, the user 124 can press a button or otherwise (e.g. voice recognition) initiate a recording of ambient sounds in the environment. For example, the user can, upon hearing a new warning sound in the environment ("car horn"), activate the processor 114 to learn the new warning sound. Upon generating a sound signature for the new warning sound, it can be stored in the user defined database 504. In another arrangement, the processor 114, upon detecting a unique sound, characteristic to a warning sound, can ask the user 124 if they desire to have the sound signature for the unique sound learned. In such regard, the processor 114 may actively sense sounds and may query the user 124 about the environment to learn the sounds. Moreover, the processor 114 can organize learned sounds based on environmental context, for example, in city and country environments.

**[0062]** In an exemplary embodiment, ASRS 100 (FIG. 2) may provide for delayed recording, to allow a previously encountered sound to be learned. For example, ASRS 100 may include a buffer to store ambient sounds recorded for a period of time. User 124 may review the recorded ambient sounds and select one or more of these recorded ambient sounds for learning (such as via user interface 106 (FIG. 1)).

**[0063]** In another learning mode, trained models can be retrieved from an on-line database 506 for use in detecting warning sounds. The previously learned models can be transmitted on a scheduled basis to the processor 114, or as needed, depending on the environmental context. For example, upon the processor 114, upon detecting traffic noise, may retrieve sound signature models associated with warning sounds (e.g., ambulance, police car) in traffic. In another embodiment, upon the processor 114 detecting conversational noise (e.g. people talking), sound signature models for verbal warnings ("help", "police") may be retrieved. Groups of sound signature models may be retrieved based on the environmental context or on user directed action.

**[0064]** As shown in step 508, the ASRS processor 114 can also generate speech recognition models for warning sounds corresponding to voice, such as "help", "police", "fire", etc. The speech recognition models may be retrieved from the on-line database 506 or the user defined database 504. In the latter for example, the user 124 may say a word or enter a text version of a word to associate the word with a verbal warning sound. For instance, the user 124 may define a set of words of interest along with mappings to their meanings, and then use keyword spotting to detect their occurrences. If the user 124 enters an environment wherein another individual says the same word (e.g., "help") the processor 114 may inform the user 124 of the verbal warning sound.

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**[0065]** For other acoustic sounds, the processor 114 may generate sound signature models as shown in step 510. Notably, the processor 114 itself may generate the sound signature models, or transmit the captured warning sounds to external systems (e.g., a remote server) that generate the sound signature models. Such learning may be conducted off-line in a training phase, and the processor 114 can be uploaded with the new learning models.

**[0066]** It should also be noted that the learning models can be updated during use of the ASRS 100, for example, when the processor 114 detects warning sounds. The detected warning sounds can be used to adapt the learning models as new warning sound variants are encountered. For example, the processor 114 upon detecting a warning sound, can use the sound signature of the warning sound to update the learned models in accordance with the training phase. In such an embodiment a first learned model is adapted based on new training data collected in the environment by the processor 114. In such regard, for example, a new set of "horn" warning sounds could be included in real-time training without discarding the other "horn" sounds already captured in the existing model.

**[0067]** Upon completion of learning, uploading, or retrieval of sound signature models, the processor 114 can monitor and report warning sounds within the environment. As shown in step 520, ambient sounds (e.g. an input signal) within the environment are captured by the ASM 201. The ambient sounds can be digitized by way of the ADC 202 and stored temporarily to a data buffer in memory 208 as shown in step 522. The data buffer may be capable of holding enough data to allow for generation of a sound signature as will be described ahead in FIG. 7.

**[0068]** In another configuration, the processor 114 can implement a "look ahead" analysis system by way of the data buffer for reproduction of pre-recorded audio content, using a data buffer to offset the reproduction of the audio signal. The look-ahead system allows the processor 114 to analyze potentially harmful audio artifacts (e.g. high level onsets, bursts, etc.) either received from an external media device, or detected with the ambient microphones 201, in-situ before it is reproduced. The processor 114 can thus mitigate the audio artifacts in advance to reduce timbral distortion effects caused by, for instance, attenuating high level transients.

**[0069]** At step 524, signal conditioning techniques may be applied to the ambient sound, for example, to suppress noise or gate the noise to a predetermined threshold. Other signal processing steps such as threshold detection shown in step 526 may be used to determine whether ambient sounds should be evaluated for warning sounds. For instance, to conserve computational processing resources (e.g., battery, processor), only ambient sounds that exceed a predetermined power level may be evaluated for warning

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sounds. Other metrics such as signal spectrum, duration, and stationarity may be considered in determining whether the ambient sound is analyzed for warning sounds. Notably, other metrics (e.g., context aware) may also be used to determine when the ambient sound should be processed for warning sound detection.

**[0070]** If at least one property (e.g., power, spectral shape, duration, etc.) of the ambient sound exceeds a threshold (or adaptive threshold), the processor 114 at step 530 can proceed to generate a sound signature for the ambient sound. In one embodiment the sound signature is a feature vector which can include statistical parameters or salient features of the ambient sound.

**[0071]** An ambient sound with a warning sound (e.g. "bell", "siren"), such as shown in step 532, is generally expected to exhibit features similar to sound signatures for similar warning sounds (e.g. "bell", "siren") stored in the user defined database 504 or the on-line database 506. The processor 114 can also identify a direction and speed of the sound source if it is moving, for example, by evaluating Doppler shift as shown in step 534 and 536. The processor 114, by way of beam-forming among multiple ASMs 201 may also estimate a direction of a sound source generating the warning sound.

**[0072]** The speed and bearing of the sound source can also be estimated using pitch analysis to detect changes predicted by Doppler effect, or alternatively by an analysis in changes in relative phase and magnitude between the two ASM signals. The processor 114, by way of a sound recognition engine, may detect general warning signals such as car horns or emergency sirens (and other signals referenced by ISO 7731) using spectral and temporal analysis.

**[0073]** The processor 114 can also analyze the ambient sound to determine if a verbal warning (e.g. "help", "police", "excuse me") is present. As shown in step 540, the sound signature of the ambient sound can be analyzed for speech content. For example, the sound signature may be analyzed for voice information, such as vocal cord pitch periodicities, time-varying voice formant envelopes, or other articulation parameter attributes. Upon detecting the presence of voice in the ambient sound, the processor 114 can perform key word detection (e.g. "help") in the spoken content as shown in step 542. Speech recognition models as well as language models may be used to identify key words in the spoken content. As previously noted, the user 124 may say or enter in one or more warning sounds that may be mapped to associated learning models for sound signature detection.

**[0074]** As shown in step 552, the user 124 may also provide user input to direct operation of the processor 114, for example, to select an operational mode as shown in 550. As one example, the operational mode can enable, disable or adjust monitoring of warning sounds. For example, in a listening mode, the processor 114 may mix audio

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content with ambient sound while monitoring for warning sounds. In a quiet mode, the processor 114 may suppress or attempt to actively cancel all noises except detected warning sounds.

**[0075]** The user input may be in the form of a physical interaction (e.g., button press) or a vocalization (e.g., spoken command). The operating mode can also be controlled by a prioritizing module as shown in step 554. The prioritizing module may prioritize warning sounds based on severity and context. For example, if the user 124 is in a phone call, and a warning sound is detected, the processor 114 may audibly inform the user 124 of the warning and/or present a text message of the warning sound. If the user 124 is listening to music or a voice communication, and a warning sound is detected, the processor 114 may automatically shut off the music or voice audio and alert the user. The user 124, by way of user interface 106 (FIG. 1) or an administrator, may rank warning sounds and instruct the processor 114 how to respond to warnings in various contexts.

**[0076]** FIG. 6 is a flowchart of a method 600 for managing audio delivery based on detected sound signatures in accordance with an exemplary embodiment. The method 600 can be practiced with more or less than the number of steps shown and is not limited to the order shown. To describe the method 600, reference will be made to components of FIG 2 , although it is understood that the method 600 can be implemented in any other manner using other suitable components.

**[0077]** As noted previously, the audio interface 212 can supply audio content (e.g., music, cell phone, voice mail, etc.) to the processor 114. In such regard, the user 124 may listen to music, talk on the phone, receive voice mail, or perform other audio related tasks while the processor 114 additionally monitors warning sounds in the environment. During normal use, when a warning sound is not present, the processor 114 may operate normally to recreate the sound experience requested by the user 124. If however the processor 114 detects a warning sound, the processor 114 may manage audio content delivery to notify the user 124 of the warning sound. Managing audio content delivery can include adjusting or overriding other current audio settings.

**[0078]** By way of example, as shown in step 602, the audio interface 212 receives audio content from a media player, such as a portable music player, or cell phone. The audio content can be delivered to the user's vehicle cabin by way of the VCRs 112, 120 as shown in step 604.

**[0079]** At step 606, the processor 114 monitors ambient sound in the environment captured at the ASM 201. Ambient sound may be sampled at sufficiently data rates (e.g. 8 kHz, 16 kHz, and 32 KHz) to allow for feature extraction of sound signatures. Moreover, the processor 114 may adjust the sampling rate based on the information

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content of the ambient signal. For example, upon the ambient sound exceeding a first threshold, the sampling rate may be set to a first rate (e.g., 4 KHz). As the ambient sound increases in volume, or as prominent features are identified, the sampling rate may be increased to a second rate (e.g., 8 KHz) to increase signal resolution. Although, the higher sampling rate may improve resolution of features, the lower sampling rate may preserve use of computational resources for minimally sufficient feature resolution (e.g., power supply 210, processor 114).

**[0080]** If at step 608, a sound signature is detected, the processor 114 may determine a priority of the detected sound signature (at step 610). The priority establishes how the processor 114 manages audio content. Notably, warning sounds for various environmental conditions and user experiences can be learned. Accordingly, the user 124 or an administrator, can establish priorities for warning sounds. Moreover, these priorities may be based on environmental context. For example, if a user 124 is in a warehouse where loading vehicles emit a beeping sound, sound signatures for such vehicles can be given the highest priority. A user 124 may also prioritize learned warning sounds, for example, via a user interface on a paired device (e.g., cell phone), or via speech recognition (e.g., "prioritize – 'ambulance' – high").

**[0081]** Upon detecting a warning sound and identifying a priority, the processor 114, at step 612, selectively manages at least a portion of the audio content based on the priority. For example, if the user 124 is listening to music during the time a warning sound is detected, the processor 114 may decrease the music volume to present an audible notification. This may represent one indication that the processor 114 has detected a warning sound.

**[0082]** At step 614, the processor 114 may further present an audible notification to the user 124. For example, upon detecting a "horn" sound, a speech-to-text message can be presented to the user 124 to audibly inform them that a horn sound has been detected (e.g., "horn detected"). Information related to the warning sound (e.g., direction, speed, priority, etc.) may also be presented with the audible notification.

**[0083]** In a further arrangement, the processor 114 may send a message to a device operated by the user 124 to visually display the notification, as shown in step 616. For example, if the user has disengaged audible notification, the processor 114 may transmit a text message to a paired device (e.g., a cell phone) containing the audible warning (or to indicator 116 configured as a visual indicator). Moreover, the processor 114 may beacon out an audible alarm to other devices within a vicinity, for example via Wi-Fi (e.g., IEEE 802.16x). Other devices in a proximity of the user 124 may sign up to receive audible alarms from the processor 114. In such regard, the processor 114 can

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beacon a warning notification to other devices in the area to share warning information with other people.

**[0084]** FIG. 7 is a flowchart of a method 700 further describing sound signature detection in accordance with an exemplary embodiment. The method 700 can be practiced with more or fewer than the number of steps shown and is not limited to the order shown. The method 700 can begin in a state in which the processor 114 is actively monitoring warning sounds in the environment.

**[0085]** At step 711, ambient sound captured from the ASM 201 may be buffered into short term memory as frames. As an example, the ambient sound may be sampled at 8 KHz with 10-20 ms frame sizes (80 to 160 samples). The frame size may also vary depending on the energy level of the ambient sound. For example, the processor 114 upon detecting low level sounds (e.g., about 70-74 dB SPL) may use a frame size of about 30 ms, and update the frame size to about 10 ms as the power level increases (e.g., greater than about 86 dB SPL). The processor 114 may also increase the sampling rate in accordance with the power level and/or a duration of the ambient sound. (A longer frame size with lower sampling may compromise resolution for computational resources.) The data buffer is desirably of sufficient length to hold a history of frames (e.g., about 10-15 frames) for short-term historical analysis.

**[0086]** At step 712, the processor 114 may perform feature extraction on the frame as the ambient sound is buffered into the data buffer. As one example, feature extraction may include performing a filter-bank analysis and summing frequencies in auditory bandwidths. Features may also include Fast Fourier Transform (FFT) coefficients, Discrete Cosine Transform (DCT) coefficients, cepstral coefficients, partial autocorrelation (PARCOR) coefficients, wavelet coefficients, statistical values (e.g., energy, mean, skew, variance), parametric features, or any other suitable data compression feature set.

**[0087]** Additionally, dynamic features, such as derivatives of any order, may be added to the static feature set. As one example, mel-frequency-cepstral analysis may be performed on the frame to generate between about 10-16 mel-frequency-cepstral coefficients. The small number of coefficients represent features that may be compactly stored to memory for that particular frame. Such front end feature extraction techniques may reduce the amount of data used to represent the data frame.

**[0088]** At step 713, the features may be incorporated as a sound signature and compared to learned models, for example, those retrieved from the warning sounds database 718 (e.g., user defined database 504 or the on-line database 506 of FIG. 5). A sound signature may be defined as a sound in the user's ambient environment which has significant perceptual saliency. As an example, a sound signature may correspond to an

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alarm, an ambulance, a siren, a horn, a police car, a bus, a bell, a gunshot, a window breaking, or any other warning sound, including voice. The sound signature may include features characteristic to the sound. As an example, the sound signature may be classified by statistical features of the sound (e.g., envelope, harmonics, spectral peaks, modulation, etc.).

**[0089]** Notably, each learned model used to identify a sound signature has a set of features specific to a warning sound. For example, a feature vector of a learned model for an "alarm" is sufficiently different from a feature vector of a learned model for a "bell sound". Moreover, the learned model may describe interconnectivity (e.g., state transitions, emission probabilities, initial probabilities, synaptic connections, hidden layers) among the feature vectors (e.g. frames). For example, the features of a "bell" sound may change in a specific manner compared to the features of an "alarm" sound. The learned model may be a statistical model such as a Gaussian mixture model (GMM), a Hidden Markov Model (HMM), a Bayes Classifier, or a Neural Network (NN) that requires training.

**[0090]** In the foregoing, a Gaussian Mixture Model (GMM) is presented, although it should be noted that any of the above models may be used for sound signature detection. In this case, each warning sound may have an associated GMM used for detecting the warning sound. As an example, the warning sound for an "alarm" may have its own GMM, and a warning sound for a "bell" may have its own GMM. Separate GMMs may also be used as a basis for the absence of the sounds ("anti-models"), such as "not alarm" or "not bell." Each GMM may provide a model for the distribution of the feature statistics for each warning sound in a multi-dimensional space.

**[0091]** Upon presentation of a new feature vector, the likelihood of the presence of each warning sound may then be calculated. In order to detect a warning sound, each warning sound's GMM may be evaluated relative to its anti-model, and a score related to the likelihood of that warning sound may be computed. A threshold may be applied directly to this score to decide whether the warning sound is present or absent. Similarly, the sequence of scores may be relayed to yet another module which uses a more complex rule to decide presence or absence. Examples of such rules include linear smoothing or median filtering.

**[0092]** As previously noted, a HMM model or NN model with their associated connection logic may be used in place of each GMM for each learning model. For example, each warning sound in the database 718 may have a corresponding HMM. A sound signature for a warning sound captured at the ASM 201 in ambient sound may be processed through a lattice network (e.g. Viterbi network) for comparison to each HMM, to determine which HMM, if any, corresponds to the warning sound. Alternatively, in a

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trained NN, the sound signature may be input to the NN, where the output states of the NN correspond to warning sound indices. The NN may include various topologies such as a Feed-Forward, Radial Basis Function, Hopfield, Time-Delay Recurrent, or other optimized topologies for real-time sound signature detection.

**[0093]** At step 714, a distortion metric is performed with each learned model to determine which learned models are closest to the captured feature vector (e.g., sound signature). The learned model with the smallest distortion (e.g., mathematical distance) is generally considered the correct match, or recognition result. It should also be noted that the distortion may be calculated as part of the model comparison in step 713. This is because the distortion metric may depend on the type of model used (e.g., HMM, NN, GMM, etc.) and in fact may be internal to the model (e.g. Viterbi decoding, back-propagation error update, etc.). The distortion module is merely presented in FIG. 7 as a separate component to suggest use with other types of pattern recognition methods or learning models.

**[0094]** Upon evaluating the feature vector (e.g. sound signature) against the candidate warning sound learned models, the ambient sound at step 715 may be classified as a warning sound. Each of the learned models may be associated with a score. For example, upon the presentation of a sound signature, each GMM may produce a score. The scores may be evaluated against a threshold, and the GMM with the highest score may be identified as the detected warning sound. For example, if the learned model for the "alarm" sound produces the highest score (e.g., smallest distortion result) compared to other learned models, the ambient sound may be classified as an "alarm" warning sound.

**[0095]** The classification step 715 also takes into account likelihoods (e.g. recognition probabilities). For example, as part of the step of comparing the sound signature of the unknown ambient sound against all the GMMs for the learned models, each GMM may produce a likelihood result, or output. As an example, these likelihood results may be evaluated against each other or in a logical context, to determine the GMM considered "most likely" to match the sound signature of the warning sound. The processor 114 may then select the GMM with the highest likelihood or score via soft decisions.

**[0096]** The processor 114 may continually monitor the environment for warning sounds, or monitor the environment on a scheduled basis. In one arrangement, the processor 114 may increase monitoring in the presence of high ambient noise possibly signifying environmental danger or activity. Upon classifying an ambient sound as a warning sound the processor 114, at step 716, the ASRS 100 may generate an alarm. As previously noted, the processor 114 may mix the warning sound with audio content, amplify the warning sound, reproduce the warning sound, and/or deliver an audible

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message. As one example, spectral bands of the audio content that mask the warning sound may be suppressed to increase an audibility of the warning sound. This serves to notify the user 124 of a warning sounded detected in the environment, of which the user 124 may not be aware of depending on their environmental context.

**[0097]** As an example, the processor 114 may present an amplified audible notification to the user via the VCRs 112, 120. The audible notification may be a synthetic voice identifying the warning sound (e.g. "car alarm"), a location or direction of the sound source generating the warning sound (e.g. "to your left"), a duration of the warning sound (e.g., "3 minutes") from initial capture, and any other information (e.g., proximity, severity level, etc.) related to the warning sound. Moreover, the processor 114 may selectively mix the warning sound with the audio content based on a predetermined threshold level. For example, the user 124 may prioritize warning sound types for receiving various levels of notification, and/or identify the sound types as desirable or undesirable.

**[0098]** FIG. 8, presents a pictorial diagram 800 for mixing ambient sounds and warning sounds with audio content. In the illustration show, the processor 114 is directing music 136 to the vehicle cabin 126 via VCR 120 while simultaneously monitoring warning sounds in the environment. At time, T, the processor 114, upon detecting a warning sound (signature 135), can lower the music volume from the media player 150 (graph 141), and increase the volume of the ambient sound received at the ASM 201 (graph 142). Other mixing arrangements are herein contemplated.

**[0099]** In such regard, there is a smooth audio transition between the music 136 and the warning sound 135. Notably, the ramp up and down times can also be adjusted based on the priority of the warning sound. For example, in an extreme case, the processor 114 may immediately shut off the music, and present the audible warning. Other various implementations for mixing audio and managing audio content delivery are herein contemplated.

**[00100]** Moreover, the audio content may be managed with other media devices (e.g., a cell phone). For example, upon detecting a warning sound, the processor 114 may inform the user 124 and the called party of a warning sound. In such regard, the user 124 does not need to inform the called party since they also receive the notification, which may save them time to explain an emergency situation.

**[00101]** As one example, the processor 114 may spectrally enhance the audio content in view of the ambient sound. Moreover, a timbral balance of the audio content may be maintained by taking into account level dependent equal loudness curves and other psychoacoustic criteria (e.g., masking) associated with a personalized hearing level (PHL) 430. For example, auditory queues in a received audio content may be enhanced

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based on the PHL 430 and a spectrum of the ambient sound captured at the ASM 201. Frequency peaks within the audio content may be elevated relative to ambient noise frequency levels and in accordance with the PHL 430 to permit sufficient audibility of the ambient sound. The PHL 430 reveals frequency dynamic ranges that may be used to limit the compression range of the peak elevation in view of the ambient noise spectrum.

**[00102]** In one arrangement, the processor 114 may compensate for a masking of the ambient sound by the audio content. Notably, the audio content, if sufficiently loud, may mask auditory queues in the ambient sound, which can: i) potentially cause hearing damage, and ii) prevent the user 124 from hearing warning sounds in the environment (e.g., an approaching ambulance, an alarm, etc.). Accordingly, the processor 114 may accentuate and attenuate frequencies of the audio content and ambient sound to permit maximal sound reproduction while simultaneously permitting audibility of ambient sounds.

**[00103]** In one exemplary embodiment, the processor 114 may narrow noise frequency bands within the ambient sound to permit sensitivity to audio content between the frequency bands. The processor 114 may also determine if the ambient sound contains salient information (e.g., warning sounds) that should be un-masked with respect to the audio content. If the ambient sound is not relevant, the processor 114 may mask the ambient sound (e.g., increase levels) with the audio content until warning sounds are detected.

**[00104]** FIG. 9 is a flowchart of a method 900 for updating the sound signature detection library dependent on the vehicle location. At step, 902, a current vehicle location may be acquired. The location of vehicle 102 may be determined with a number of methods, including: a Global Positioning System (GPS) for determining a GPS location and cell-phone signal cell codes for triangulating the location (for example, based on a signal strength of the received signal(s) from cell phone networks).

**[00105]** The acquired vehicle location may be used, at step 904, to determine which "sound library cell" the vehicle 102 is located in. The sound library cell may refer to a geographic region, such as a country, state, province or city. The sound library cell may contain the target sound signatures which the vehicle's sound recognition system detects (for example, for a particular sound signature of a particular fire engine siren, there may be associated GMM statistics, as described above). The cell library may be determined from the acquired location (for example, using a look-up table), or may be acquired directly from coded signals embedded in the received location signal (for example, a cell-phone signal or a radio signal).

**[00106]** If, at step 906, the vehicle library cell location is determined to have changed, then the current sound signature library of the vehicle is updated (at step 910). For

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example, the current vehicle sound signature library may be updated from data provided by an on-line sound signature library 908, where the new sound signature data may be received wirelessly or from a storage device located on the vehicle 102.

**[00107]** Although the invention has been described in terms of automotive sound recognition systems and methods for enhancing situation awareness in a vehicle, it is contemplated that one or more steps and/or components may be implemented in software for use with microprocessors/general purpose computers (not shown). In this embodiment, one or more of the functions of the various components and/or steps described above may be implemented in software that controls a computer. The software may be embodied in non-transitory tangible computer readable media (such as, by way of non-limiting example, a magnetic disk, optical disk, flash memory, hard drive, etc.) for execution by the computer.

**[00108]** Although the invention is illustrated and described herein with reference to specific embodiments, the invention is not intended to be limited to the details shown. Rather, various modifications may be made in the details within the scope and range of equivalents of the claims and without departing from the invention.

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## What is Claimed:

1. A sound recognition system for a vehicle comprising:  
at least one ambient sound microphone (ASM), disposed on the vehicle,  
configured to capture ambient sound external to the vehicle;  
at least one vehicle cabin receiver (VCR) configured to deliver audio  
content to a vehicle cabin of the vehicle; and  
a processor, coupled to the at least one ASM and the at least one VCR, the  
processor configured to detect at least one sound signature in the ambient sound and to  
adjust the audio content delivered to the vehicle cabin based on the detected at least  
one sound signature.
2. The system according to claim 1, wherein the sound signature  
includes at least one of a non-verbal warning sound or a verbal warning sound.
3. The system according to claim 2, wherein the non-verbal warning  
sound includes at least one of an alarm, a horn, a siren or a noise.
4. The system according to claim 2, wherein the verbal warning sound  
includes one or more spoken words associated with a verbal warning.
5. The system according to claim 1, wherein the processor is  
configured to selectively adjust a volume of the audio content delivered to the vehicle  
cabin when the at least one sound signature is detected.
6. The system according to claim 1, wherein the processor is  
configured to reproduce the ambient sound associated with the at least one sound  
signature within the vehicle cabin.
7. The system according to claim 1, wherein the processor is  
configured to selectively mix the audio content with the ambient sound when the at least  
one sound signature is detected.
8. The system according to claim 1, further including a memory  
configured to store a target sound captured by the at least one ASM for learning the  
corresponding sound signature.
9. The system according to claim 8, wherein the memory is configured  
to store the target sound responsive to an indication by a user of the system.
10. The system according to claim 8, wherein the memory is configured  
to store the target sound automatically by the system.
11. The system according to claim 1, further including an audio  
interface coupled to the processor to receive the audio content from at least one of a  
media player or a mobile phone.

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12. The system according to claim 1, wherein the system is configured to transmit one or more of the ambient sound and the at least one sound signature to a remote location.

13. A method for increasing auditory situation awareness in a vehicle, the method comprising the steps of:

capturing ambient sound external to the vehicle from at least one ambient sound microphone (ASM) disposed on the vehicle;

monitoring the ambient sound for a target sound by detecting a sound signature corresponding to the target sound in the ambient sound; and

adjusting a delivery of audio content by at least one vehicle cabin receiver (VCR) to a vehicle cabin of the vehicle based on the target sound.

14. The method according to claim 13, wherein the adjusting of the delivery of the audio content includes mixing the target sound with the audio content for delivery to the vehicle cabin.

15. The method according to claim 14, wherein the target sound is mixed with the audio content in accordance with a priority of the target sound.

16. The method according to claim 13, wherein the adjusting of the delivery of the audio content includes at least one of:

passing the target sound to the at least one VCR,

amplifying the target sound for delivery to the vehicle cabin,

attenuating the target sound for delivery to the vehicle cabin,

generating an audible message based on the target sound for delivery to the vehicle cabin, or

replacing the target sound with a predetermined sound corresponding to the target sound for delivery to the vehicle cabin.

17. The method according to claim 13, the method further including: detecting at least one of a direction of a sound source or a speed of the sound source generating the target sound from the sound signature; and

indicating the at least one of the direction or the speed of the sound source in the vehicle cabin.

18. The method according to claim 13, the method further including transmitting a warning notification to other devices.

19. The method of claim 13, wherein the target sound includes at least one of an alarm, a horn, a siren, a spoken utterance or a noise.

20. The method according to claim 13, wherein the detecting of the sound signature includes detecting a spoken utterance in the ambient sound associated with a verbal warning, the method further including:

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indicating the verbal warning in the vehicle cabin.

21. The method according to claim 13, the method further including:  
acquiring a current location of the vehicle;  
associating the current location with a sound signature; and  
updating a sound signature library containing a plurality of predetermined target sounds with the sound signature associated with the current location.

22. A method for sound signature detection for a vehicle, the method comprising:  
capturing ambient sound external to the vehicle from at least one ambient sound microphone (ASM) disposed on the vehicle; and  
receiving a directive to learn a sound signature within the ambient sound, wherein a voice command or an indication from a user is received and is used to initiate the steps of capturing and learning.

23. The method according to claim 22, further including saving the sound signature at least one of locally on the vehicle or remotely to a server.

24. The method according to claim 22, further including adapting a previously learned warning sound model using the sound signature within the ambient sound.

25. A method for personalized listening in a vehicle, the method comprising:  
capturing ambient sound external to the vehicle from at least one ambient sound microphone (ASM) disposed on the vehicle;  
detecting a sound signature within the ambient sound that is associated with a warning sound; and  
mixing the warning sound with audio content delivered to the vehicle cabin via at least one vehicle cabin receiver (VCR) in accordance with a priority of the warning sound and a personalized hearing level (PHL).

26. The method according to claim 25, wherein the detecting of the sound signature includes:  
retrieving learned models from a database;  
comparing the sound signature to the learned models; and  
identifying the warning sound from the learned models responsive to the comparison.

27. The method according to claim 25, further including enhancing auditory queues in the warning sound relative to the audio content based on a spectrum of the ambient sound captured at the at least one ASM.

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FIG. 1

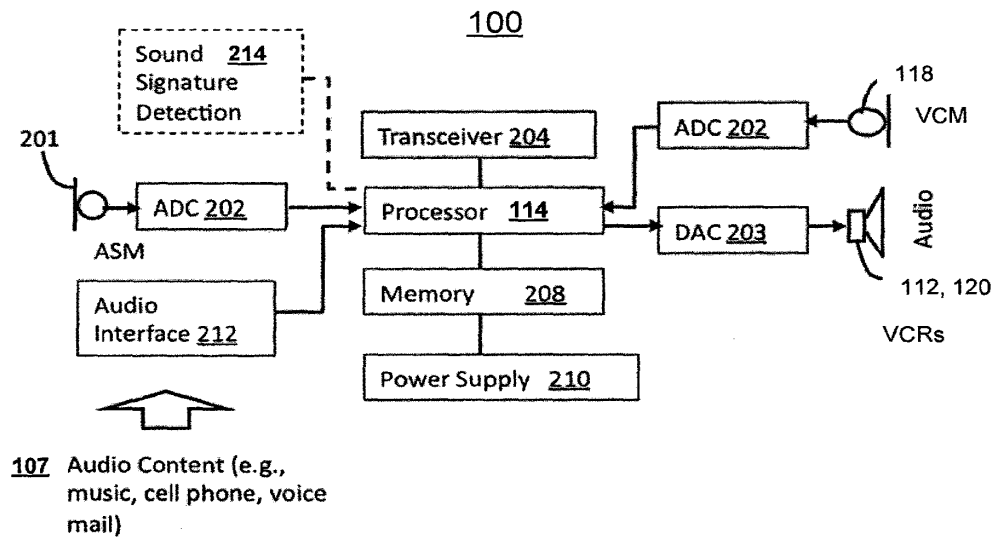
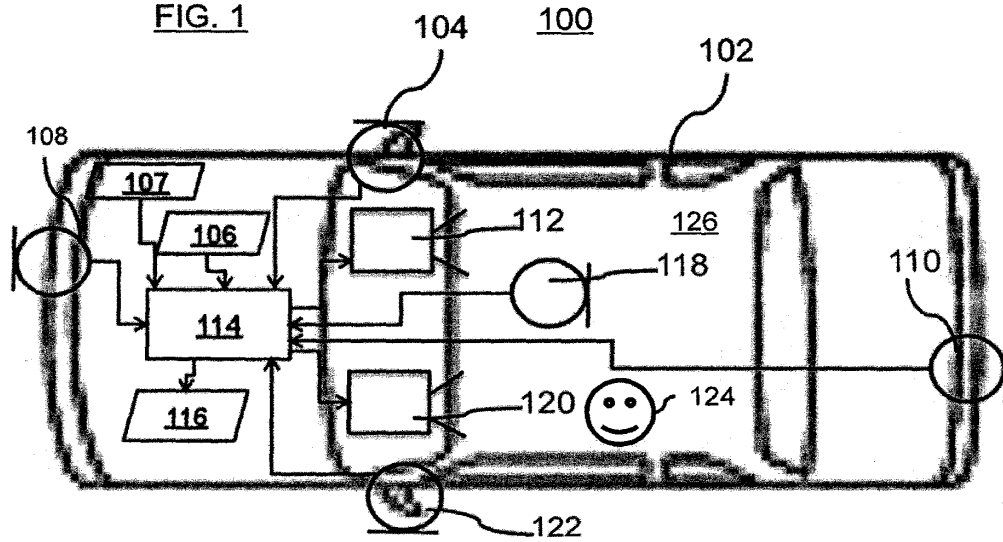
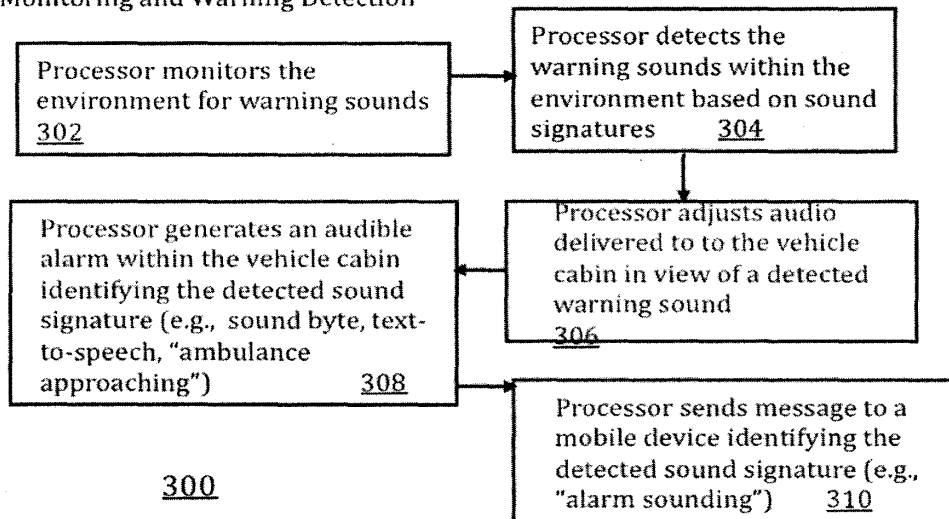


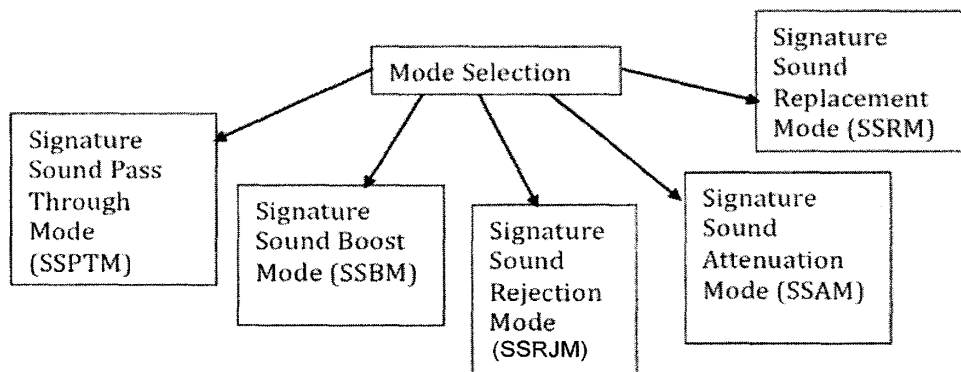
FIG. 2

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## Monitoring and Warning Detection

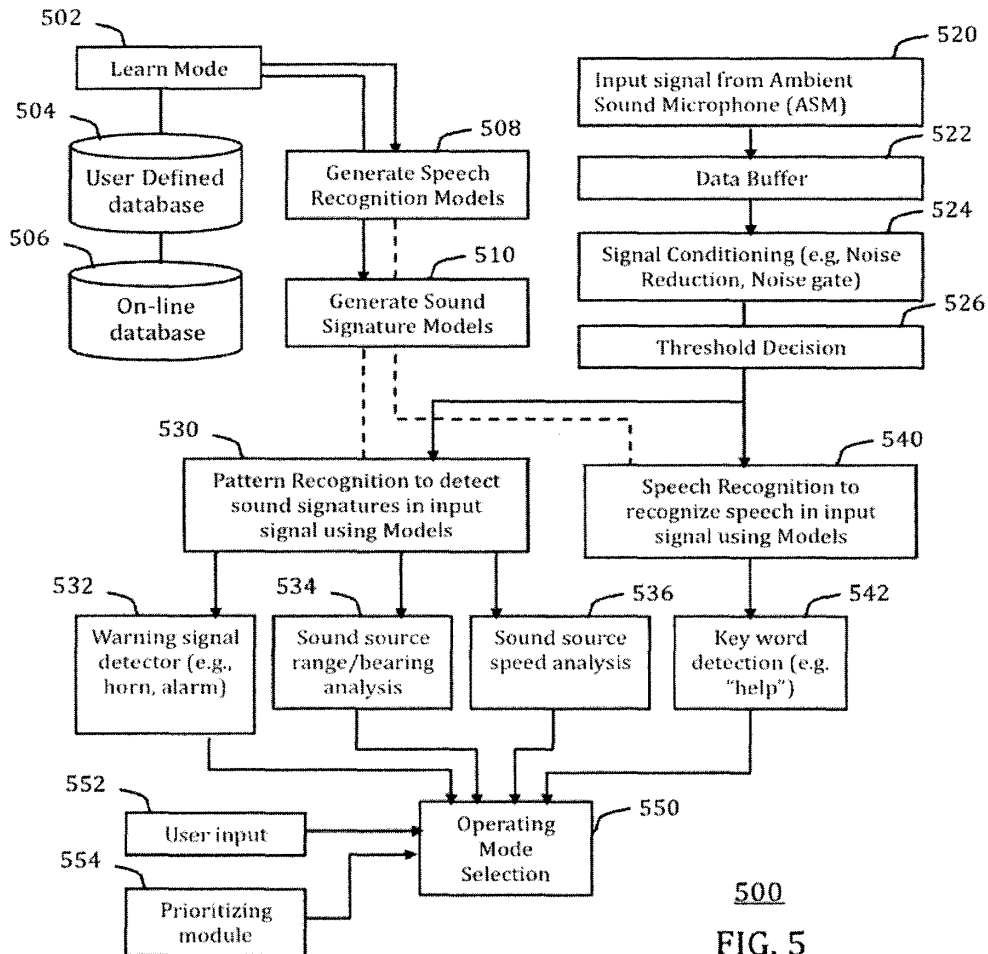


300  
FIG. 3



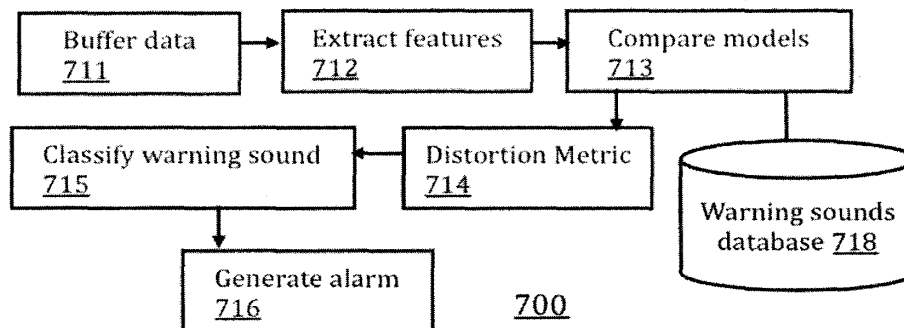
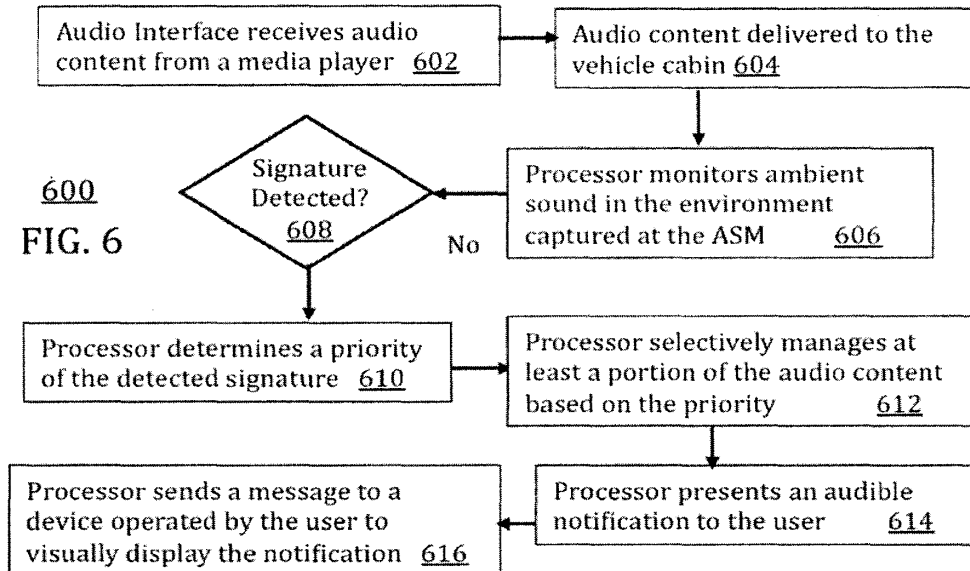
400  
FIG. 4

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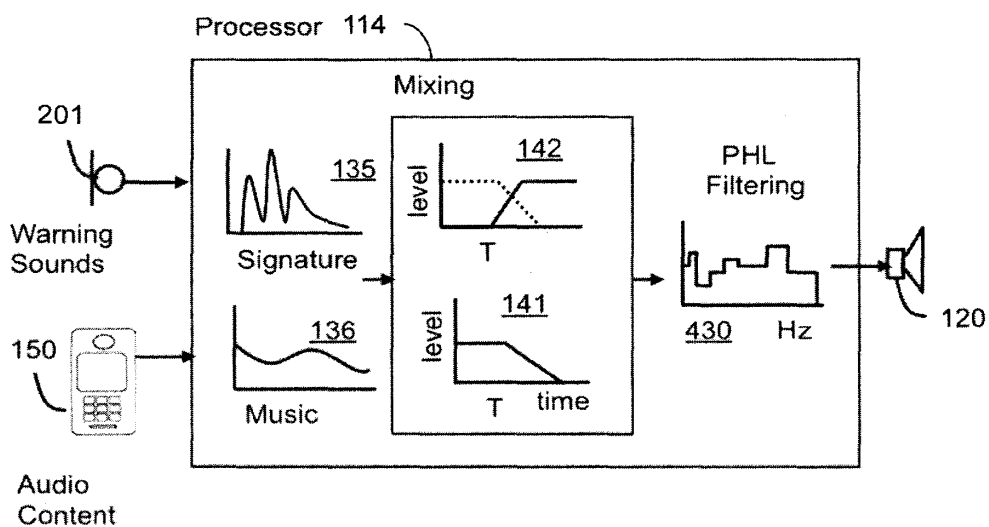


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## Managing Audio Delivery

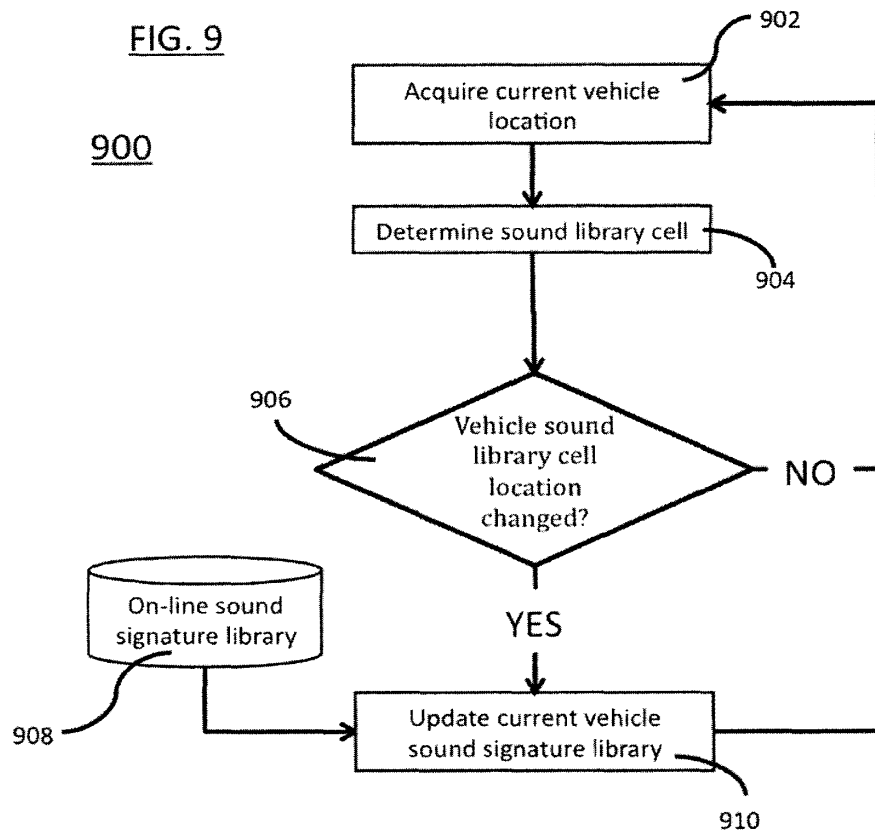


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**800**  
**FIG. 8**

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FIG. 9

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/21077

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H04B 1/00 (2012.01)

USPC - 381/86

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
USPC 381/86Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
USPC 381/86, 87, 91, 94.1; 180/167Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
PubWEST (PGPB, USPT, EPAB, JPAB); Google.com; Google Scholar.  
Search terms: vehicle, automobile, external microphone, ambient, exterior, noise, sound, warning, alarm, horn, siren, voice, volume, music, sound signature, verbal, spoken.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                   | Relevant to claim No. |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y         | US 2007/0127734 A1 (Brulle-Drews) 07 June 2007 (07.06.2007) Entire document, especially Title, para. [0006], [0037], Fig. 4, 5.                                                                                      | 1-27                  |
| Y         | US 2008/0240458 A1 (Goldstein et al.) 2 October 2008 (02.10.2008) Entire document, especially para. [0002], [0009], [0011], [0026], [0028], [0036], [0040], [0045]-[004], [0052], [0059], [0061], [0065], Fig. 2, 8. | 1-27                  |

☐ Further documents are listed in the continuation of Box C.

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Date of the actual completion of the international search

19 March 2012 (19.03.2012)

Date of mailing of the international search report

26 MAR 2012

Name and mailing address of the ISA/US

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| Electronic Acknowledgement Receipt          |                                                              |
|---------------------------------------------|--------------------------------------------------------------|
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| <b>Application Number:</b>                  | 17592143                                                     |
| <b>International Application Number:</b>    |                                                              |
| <b>Confirmation Number:</b>                 | 3471                                                         |
| <b>Title of Invention:</b>                  | METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION |
| <b>First Named Inventor/Applicant Name:</b> | Steven Wayne Goldstein                                       |
| <b>Customer Number:</b>                     | 150139                                                       |
| <b>Filer:</b>                               | John Patrick Keady                                           |
| <b>Filer Authorized By:</b>                 |                                                              |
| <b>Attorney Docket Number:</b>              | CONT-17321892                                                |
| <b>Receipt Date:</b>                        | 30-JUN-2022                                                  |
| <b>Filing Date:</b>                         | 03-FEB-2022                                                  |
| <b>Time Stamp:</b>                          | 15:42:30                                                     |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                  |

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### File Listing:

| Document Number | Document Description | File Name               | File Size(Bytes)/ Message Digest         | Multi Part /.zip | Pages (if appl.) |
|-----------------|----------------------|-------------------------|------------------------------------------|------------------|------------------|
| 1               | Transmittal Letter   | IDS-transmittal-ltr.pdf | 121351                                   | no               | 1                |
|                 |                      |                         | 992930d54b9f6c4dd599874c5f285b98737be36d |                  |                  |

### Warnings:

|              |                                                    |                                  |                                          |    |    |
|--------------|----------------------------------------------------|----------------------------------|------------------------------------------|----|----|
| Information: |                                                    |                                  |                                          |    |    |
| 2            | Information Disclosure Statement (IDS) Form (SB08) | MASTER-FOREIGN-NONPATENT-IDS.pdf | 1035436                                  | no | 5  |
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| 3            | Foreign Reference                                  | EP1385324A1-PDF.pdf              | 291998                                   | no | 15 |
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| 4            | Foreign Reference                                  | EP1401240A1-PDF.pdf              | 269098                                   | no | 14 |
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| 6            | Foreign Reference                                  | EP1640972A1-PDF.pdf              | 219543                                   | no | 15 |
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| 7            | Foreign Reference                                  | JPH0877468-PDF.PDF               | 753639                                   | no | 11 |
|              |                                                    |                                  | 8c7af5c8bc87c531d5920333f1968dd6c1519160 |    |    |
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| 9                            | Foreign Reference | WO2004114722A1-PDF.pdf | 725963                                   | no | 19  |
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| 10                           | Foreign Reference | WO2006037156A1-PDF.pdf | 1531590                                  | no | 37  |
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| 11                           | Foreign Reference | WO2006054698-PDF.PDF   | 5448882                                  | no | 148 |
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| 12                           | Foreign Reference | WO2007092660A1-PDF.pdf | 159414                                   | no | 6   |
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| 13                           | Foreign Reference | WO2008050583A1-PDF.pdf | 2971807                                  | no | 67  |
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| 14                           | Foreign Reference | WO2009023784-PDF.PDF   | 2445774                                  | no | 37  |
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| Warnings:                    |                   |                        |                                          |    |     |
| Information:                 |                   |                        |                                          |    |     |
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**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO. : 17/592,143 CONFIRMATION NO. 3471  
APPLICATION OF : STEVEN WAYNE GOLDSTEIN  
DATE FILED : 3 FEB. 2022  
EXAMINER : UNKNOWN  
TC/A.U. : OPAP  
DOCKET : CONT-17321892  
TITLE : METHOD AND DEVICE FOR ACUTE SOUND DETECTION  
AND REPRODUCTION

**TRANSMITTAL LETTER**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Date: June 30, 2022

Sir:

The attached extensive IDSs contain references filed in recent IPRs, the IPRs themselves and similar references filed in invalidity contentions filed in Court for similar inventive scope. Applicant has compiled the extensive list for the Examiner's consideration and apologizes ahead of time if any of the references are copies of previously considered related art.

Should the Examiner believe that anything further is necessary, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

Respectfully submitted,  
**TECHIYA LLC**

Date: June 30, 2022

\_\_\_\_\_/John P. Keady/  
John P. Keady, Ph.D (Physics), Ph.D (Comp. Sci)  
Assistant General Counsel: Intellectual Property  
and Chief Technical Officer  
Staton Techiya LLC  
Reg. No. 56,389  
571-606-1291

|                                                                                                     |                        |                        |
|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | OPAP                   |
|                                                                                                     | Examiner Name          | UNKNOWN                |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |

| U.S. PATENTS                                                                                               |         |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          | Remove                                                                   |                |
|------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------|-------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------|
| Examiner Initial*                                                                                          | Cite No | Patent Number                                                                                                                                                                                                                                                   | Kind Code <sup>1</sup>     | Issue Date             | Name of Patentee or Applicant of cited Document | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear |                                                                          |                |
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|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | OPAP                   |
|                                                                                                     | Examiner Name          | UNKNOWN                |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |

|    |                                                                                                                                    |
|----|------------------------------------------------------------------------------------------------------------------------------------|
| 1  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00282, December 21, 2021 |
| 2  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00242, December 23, 2021 |
| 3  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00243, December 23, 2021 |
| 4  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00234, December 21, 2021 |
| 5  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00253, January 18, 2022  |
| 6  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00324, January 13, 2022  |
| 7  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00281, January 18, 2022  |
| 8  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00302, January 13, 2022  |
| 9  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00369, February 18, 2022 |
| 10 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00388, February 18, 2022 |
| 11 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00410, February 18, 2022 |

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|                                                                                                     | Filing Date            |                        | 2022-02-03 |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |            |
|                                                                                                     | Art Unit               | OPAP                   |            |
|                                                                                                     | Examiner Name          | UNKNOWN                |            |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |            |

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|  | 12 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-01078, June 9, 2022 |  |
|  | 13 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-01099, June 9, 2022 |  |
|  | 14 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-01106, June 9, 2022 |  |
|  | 15 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-01098, June 9, 2022 |  |

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#### EXAMINER SIGNATURE

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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

|                                                                                                     |                        |                        |
|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | OPAP                   |
|                                                                                                     | Examiner Name          | UNKNOWN                |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |

### CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

### SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                 |                     |            |
|------------|-----------------|---------------------|------------|
| Signature  | /John P. Keady/ | Date (YYYY-MM-DD)   | 2022-06-30 |
| Name/Print | John P. Keady   | Registration Number | 56389      |

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
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| <b>EFS ID:</b>                              | 46092157                                                     |
| <b>Application Number:</b>                  | 17592143                                                     |
| <b>International Application Number:</b>    |                                                              |
| <b>Confirmation Number:</b>                 | 3471                                                         |
| <b>Title of Invention:</b>                  | METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION |
| <b>First Named Inventor/Applicant Name:</b> | Steven Wayne Goldstein                                       |
| <b>Customer Number:</b>                     | 150139                                                       |
| <b>Filer:</b>                               | John Patrick Keady                                           |
| <b>Filer Authorized By:</b>                 |                                                              |
| <b>Attorney Docket Number:</b>              | CONT-17321892                                                |
| <b>Receipt Date:</b>                        | 30-JUN-2022                                                  |
| <b>Filing Date:</b>                         | 03-FEB-2022                                                  |
| <b>Time Stamp:</b>                          | 15:47:49                                                     |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                  |

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| 1               | Information Disclosure Statement (IDS)<br>Form (SB08) | MASTER-IPR-IDS.pdf | 1034849                                  | no               | 5                |
|                 |                                                       |                    | 0a121ce516274f043ff3d519437a9f1ce538b116 |                  |                  |

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| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Non Patent Literature | IPR1.pdf | 1065114                                  | no | 80 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                       |          | b32633d9277d1d5cbb0af2066ff5867d862385c1 |    |    |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |          |                                          |    |    |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |          |                                          |    |    |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Non Patent Literature | IPR2.pdf | 1943835                                  | no | 79 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                       |          | da801697fc2947375e698af3715a85d228c3169b |    |    |
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| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       |          |                                          |    |    |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Non Patent Literature | IPR3.pdf | 1479136                                  | no | 80 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                       |          | 586f5587012890efc764c06c62325f6658d3e6b0 |    |    |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |          |                                          |    |    |
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| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Non Patent Literature | IPR4.pdf | 5856275                                  | no | 88 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                       |          | bbb6e06c8da39022bf9185cf1f5e759e4c972a1  |    |    |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |          |                                          |    |    |
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| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Non Patent Literature | IPR5.pdf | 8407299                                  | no | 93 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                       |          | 889345276652cbf08e8b18236b62f4a383c4f305 |    |    |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |          |                                          |    |    |
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| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Non Patent Literature | IPR6.pdf | 2934158                                  | no | 96 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                       |          | e3cdedca197bf8edfaca52fd01beac9ae8e9dc1f |    |    |
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|--------------|-----------------------|-----------|-------------------------------------------|----|----|
| 8            | Non Patent Literature | IPR7.pdf  | 8015419                                   | no | 91 |
|              |                       |           | da157ea06e8b5a9fac276dfd4986680d2d48e57a  |    |    |
| Warnings:    |                       |           |                                           |    |    |
| Information: |                       |           |                                           |    |    |
| 9            | Non Patent Literature | IPR8.pdf  | 1207844                                   | no | 79 |
|              |                       |           | e3045ff9a612a959a7d0b32668a27ada07cbe7f9f |    |    |
| Warnings:    |                       |           |                                           |    |    |
| Information: |                       |           |                                           |    |    |
| 10           | Non Patent Literature | IPR9.pdf  | 2841009                                   | no | 84 |
|              |                       |           | 9ef3d0e90e5f4822674c42f5aafb0d7a2ac41139  |    |    |
| Warnings:    |                       |           |                                           |    |    |
| Information: |                       |           |                                           |    |    |
| 11           | Non Patent Literature | IPR10.pdf | 1712217                                   | no | 58 |
|              |                       |           | 0fc9ba7b23d69dc17b42f5eceb527eae3739084f  |    |    |
| Warnings:    |                       |           |                                           |    |    |
| Information: |                       |           |                                           |    |    |
| 12           | Non Patent Literature | IPR11.pdf | 2025912                                   | no | 84 |
|              |                       |           | bc48559c25842c20f54e91f5b4f83950ac0ced29  |    |    |
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| Information: |                       |           |                                           |    |    |
| 13           | Non Patent Literature | IPR12.pdf | 2364619                                   | no | 84 |
|              |                       |           | 026370c6a3bda4105abd078fde3bbbdd396f6869  |    |    |
| Warnings:    |                       |           |                                           |    |    |
| Information: |                       |           |                                           |    |    |
| 14           | Non Patent Literature | IPR13.pdf | 2901733                                   | no | 90 |
|              |                       |           | c842c0d7b01864698898d4b3756b7f9e978d7b72  |    |    |
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| 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Non Patent Literature | IPR14.pdf | 2715941                                  | no       | 83 |
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| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                       |           |                                          |          |    |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |           |                                          |          |    |
| 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Non Patent Literature | IPR15.pdf | 4597743                                  | no       | 95 |
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| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |           |                                          |          |    |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |           |                                          | 51103103 |    |
| <p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> <b>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> <b>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> <b>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</b></p> |                       |           |                                          |          |    |



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| APPLICATION NUMBER | FILING OR 371(C) DATE | FIRST NAMED APPLICANT  | ATTY. DOCKET NO./TITLE |
|--------------------|-----------------------|------------------------|------------------------|
| 17/592,143         | 02/03/2022            | Steven Wayne Goldstein | CONT-17321892          |

**CONFIRMATION NO. 3471**

150139  
Akerman LLP  
777 South Flagler Drive  
Suite 1100 West Tower  
West Palm Beach, FL 33401

## PUBLICATION NOTICE



\*OC000000135318756\*

**Title:**METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION

**Publication No.**US-2022-0230616-A1

**Publication Date:**07/21/2022

## NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at [www.uspto.gov](http://www.uspto.gov). The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

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Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

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| APPLICATION NO.           | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------|-------------|------------------------|---------------------|------------------|
| 17/592,143                | 02/03/2022  | Steven Wayne Goldstein | CONT-17321892       | 3471             |
| 150139                    | 7590        | 12/22/2022             | EXAMINER            |                  |
| Akerman LLP               |             |                        | SNIEZEK, ANDREW L   |                  |
| 777 South Flagler Drive   |             |                        |                     |                  |
| Suite 1100 West Tower     |             |                        |                     |                  |
| West Palm Beach, FL 33401 |             |                        |                     |                  |
|                           |             |                        | ART UNIT            | PAPER NUMBER     |
|                           |             |                        | 2688                |                  |
|                           |             |                        | NOTIFICATION DATE   | DELIVERY MODE    |
|                           |             |                        | 12/22/2022          | ELECTRONIC       |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@akerman.com  
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personics\_docketing@cardinal-ip.com



***Notice of Pre-AIA or AIA Status***

1. The present application is being examined under the pre-AIA first to invent provisions.

***Information Disclosure Statement***

2. Each of the information disclosure statements filed on 2/3/22, 6/6/22 and 6/30/22 have been considered.

***Drawings***

3. The drawings filed 4/11/22 are acceptable to the examiner.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

(a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-17 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Independent claim 1 sets forth a “mixing value” that is sent to the earpiece, and configured to mix based upon a “mixing value”. The written

disclosure as filed does not even mention a “mixing value”, what structure is used to provide such a value, nor how such a value is used to mix the ambient sound signal and the audio content signal as set forth. Claims 2-5 inherit this language of claim 1. Independent claim 6 sets forth that a mixed signal is generated by mixing ambient sound signal with a modified audio content signal and “if a user’s voice is detected modifying the modified audio content signal before forming the mixed signal”. The written disclosure as filed does not teach such an arrangement as set forth. The limitations of claims 7-17 inherit the language of claim 6.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The four cited patents to Goldstein et al. are those patents issued from related parent applications.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW SNIEZEK whose telephone number is (571)272-7563. The examiner can normally be reached Monday-Friday 7:00 AM-3:30 PM EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Steven Lim can be reached on 571-270-1210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ANDREW L SNIEZEK/  
Primary Examiner, Art Unit

2688

/A.L.S/  
Primary Examiner, Art Unit 2688  
12/16/22

|                                          |                                       |  |                                                                |             |
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| <b><i>Notice of References Cited</i></b> | Application/Control No.<br>17/592,143 |  | Applicant(s)/Patent Under<br>Reexamination<br>Goldstein et al. |             |
|                                          | Examiner<br>ANDREW SNIEZEK            |  | Art Unit<br>2688                                               | Page 1 of 1 |

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|   | L |                                                  |                 |                         |                    |                   |
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\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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Part of Paper No. 20221216

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|                                                                                                                 | <b>Examiner</b><br>ANDREW SNIEZEK            | <b>Art Unit</b><br>2688                                            |

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| Symbol                                                                                    | Date       | Examiner |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 | 12/16/2022 | ALS      |

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| Symbol                           | Date | Examiner |
|                                  |      |          |

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| Class                         | Subclass | Date | Examiner |
|                               |          |      |          |

\* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

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|-------------------------------------------------------|--|
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688 |  |
|-------------------------------------------------------|--|

Doc code: IDS

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| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | OPAP                   |
|                                                                                                     | Examiner Name          | UNKNOWN                |
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|                        |                        |
|------------------------|------------------------|
| Application Number     | 17592143               |
| Filing Date            | 2022-02-03             |
| First Named Inventor   | Steven Wayne Goldstein |
| Art Unit               | OPAP                   |
| Examiner Name          | UNKNOWN                |
| Attorney Docket Number | CONT-17321892          |

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| Attorney Docket Number | CONT-17321892          |

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|-------------------|---------|--------------------------------------|---------------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|----------------|
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| Name/Print | John P. Keady   | Registration Number | 56389      |

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|                                                                                                     | First Named Inventor   | GOLDSTEIN, Steven Wayne |
|                                                                                                     | Art Unit               |                         |
|                                                                                                     | Examiner Name          | unknown                 |
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|                                                                                             | 2       | 5541359       |                        | 1996-07-30 | Young-Man Lee                                   |                                                                          |
|                                                                                             | 3       | 5774567       |                        | 1998-06-30 | Lawrence F. Heyl                                |                                                                          |
|                                                                                             | 4       | 7421084       |                        | 2008-09-02 | Christopher Michael Jubien, et al.              |                                                                          |
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|                                                                                             | 6       | 7986802       |                        | 2011-07-26 | Carl R. Ziller                                  |                                                                          |
|                                                                                             | 7       | 8199942       |                        | 2012-06-12 | Xiadong Mao                                     |                                                                          |
|                                                                                             | 8       | 10361673      |                        | 2019-07-23 | Takeo Matsukawa                                 |                                                                          |
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|                   | 1       | 20050207597        |                        | 2005-09-22       | Takahisa Kageyama                               |                                                                        |
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|                   | 2       | 7072482       |                        | 2006-07-04 | Van Doorn et al.                                |                                                                          |
|                   | 3       | 7778434       |                        | 2010-08-17 | Juneau et al.                                   |                                                                          |
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|                   | 5       | 6415034       |                        | 2002-07-02 | Hietanen                                        |                                                                          |
|                   | 6       | 8014553       |                        | 2011-09-06 | Radivojevic et al.                              |                                                                          |
|                   | 7       | 4088849       |                        | 1978-05-09 | Usami et al.                                    |                                                                          |
|                   | 8       | 7209569       |                        | 2007-04-24 | Boesen                                          |                                                                          |

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| Examiner Name          | UNKNOWN                |  |
| Attorney Docket Number | CONT-17321892          |  |

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| 9  | 6754359 |  | 2004-06-22 | Svean et al.     |  |
| 10 | 6021207 |  | 2000-02-01 | Puthuff et al.   |  |
| 11 | 5267321 |  | 1993-11-30 | Langberg         |  |
| 12 | RE38351 |  | 2003-12-16 | Iseberg et al.   |  |
| 13 | 7477756 |  | 2009-01-13 | Wickstrom et al. |  |
| 14 | 7450730 |  | 2008-11-11 | Bertg et al.     |  |
| 15 | 6567524 |  | 2003-05-20 | Svean et al.     |  |
| 16 | 6728385 |  | 2004-04-27 | Kvaloy et al.    |  |

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|                   | 1       | 20030165246        |                        | 2003-09-04       | Kvaloy et al.                                   |                                                                          |

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|                        |                        |  |
|------------------------|------------------------|--|
| Application Number     |                        |  |
| Filing Date            |                        |  |
| First Named Inventor   | Steven Wayne Goldstein |  |
| Art Unit               | OPAP                   |  |
| Examiner Name          | UNKNOWN                |  |
| Attorney Docket Number | CONT-17321892          |  |

|  |   |             |  |            |                 |  |
|--|---|-------------|--|------------|-----------------|--|
|  | 2 | 20080037801 |  | 2008-02-14 | Alves et al.    |  |
|  | 3 | 20060204014 |  | 2006-09-14 | Isenberg et al. |  |
|  | 4 | 20050078838 |  | 2005-04-14 | Simon           |  |

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|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
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|                                                                                                     | Examiner Name          | UNKNOWN                |
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| Name/Print | John P. Keady   | Registration Number | 56389      |

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|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | OPAP                   |
|                                                                                                     | Examiner Name          | UNKNOWN                |
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|                                                                                                            | 1       | 8045840                              |                            | 2011-10-25             | Murata                                          |                                                                          |                                                                          |                          |
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|                                                                                                            | 1       | 2006054698                           | WO                         |                        | 2006-05-26                                      | Murata                                                                   |                                                                          | ×                        |
|                                                                                                            | 2       | 2009023784                           | WO                         |                        | 2009-02-19                                      | Usher                                                                    |                                                                          | <input type="checkbox"/> |
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|    |            |    |    |            |              |  |                                     |
|----|------------|----|----|------------|--------------|--|-------------------------------------|
| 4  | H0877468   | JP |    | 1996-03-22 | Keizaburo    |  | <input checked="" type="checkbox"/> |
| 5  | H10162283  | JP |    | 1998-06-19 | Masahiro     |  | <input checked="" type="checkbox"/> |
| 6  | EP1519625  | EP | A2 |            | Victorian    |  | <input type="checkbox"/>            |
| 7  | 2006037156 | WO | A1 |            | Mejia et al. |  | <input type="checkbox"/>            |
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| 9  | 2008050583 | WO |    |            | Kitada       |  | <input type="checkbox"/>            |
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| 11 | 2004114722 | WO |    |            | Pedersen     |  | <input type="checkbox"/>            |
| 12 | EP1385324  | EP |    |            | Pedersen     |  | <input type="checkbox"/>            |
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|                                                                                                     | Art Unit               | OPAP                   |            |
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|--------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|                    | 1       | Olwal, A. and Feiner S. Interaction Techniques Using Prosodic Features of Speech and Audio Localization. Proceedings of IUI 2005 (International Conference on Intelligent User Interfaces), San Diego, CA, Jan 9-12, 2005, p. 284-286.                                           |                |
|                    | 2       | Bernard Widrow, John R. Glover Jr., John M. McCool, John Kaunitz, Charles S. Williams, Robert H. Hearn, James R. Zeidler, Eugene Dong Jr, and Robert C. Goodlin, Adaptive Noise Cancelling: Principles and Applications, PROCEEDINGS OF THE IEEE, VOL. 63, NO. 12, DECEMBER 1975 |                |
|                    | 3       | Mauro Dentino, John M. McCool, and Bernard Widrow, Adaptive Filtering in the Frequency Domain, PROCEEDINGS OF THE IEEE, VOL. 66, NO. 12, DECEMBER 1978                                                                                                                           |                |

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|                                                                                                     | Examiner Name          | UNKNOWN                |
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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.L.S/

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
( Not for submission under 37 CFR 1.99)

|                        |                        |
|------------------------|------------------------|
| Application Number     | 17592143               |
| Filing Date            | 2022-02-03             |
| First Named Inventor   | Steven Wayne Goldstein |
| Art Unit               | OPAP                   |
| Examiner Name          | UNKNOWN                |
| Attorney Docket Number | CONT-17321892          |

|    |                                                                                                                                    |
|----|------------------------------------------------------------------------------------------------------------------------------------|
| 1  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00282, December 21, 2021 |
| 2  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00242, December 23, 2021 |
| 3  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00243, December 23, 2021 |
| 4  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00234, December 21, 2021 |
| 5  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00253, January 18, 2022  |
| 6  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00324, January 13, 2022  |
| 7  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00281, January 18, 2022  |
| 8  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00302, January 13, 2022  |
| 9  | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00369, February 18, 2022 |
| 10 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00388, February 18, 2022 |
| 11 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-00410, February 18, 2022 |

|                                                                                                     |                        |                        |            |
|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     |                        | 17592143   |
|                                                                                                     | Filing Date            |                        | 2022-02-03 |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |            |
|                                                                                                     | Art Unit               | OPAP                   |            |
|                                                                                                     | Examiner Name          | UNKNOWN                |            |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |            |

|    |                                                                                                                               |
|----|-------------------------------------------------------------------------------------------------------------------------------|
| 12 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-01078, June 9, 2022 |
| 13 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-01099, June 9, 2022 |
| 14 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-01106, June 9, 2022 |
| 15 | SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS, AMERICA, INC.,<br>v. STATON TECHIYA, LLC, IPR2022-01098, June 9, 2022 |

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#### EXAMINER SIGNATURE

|                    |                                 |                 |            |
|--------------------|---------------------------------|-----------------|------------|
| Examiner Signature | /ANDREW L SNIEZEK/ (12/16/2022) | Date Considered | 12/16/2022 |
|--------------------|---------------------------------|-----------------|------------|

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.L.S/

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
( Not for submission under 37 CFR 1.99)

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| Application Number     | 17592143               |
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| First Named Inventor   | Steven Wayne Goldstein |
| Art Unit               | OPAP                   |
| Examiner Name          | UNKNOWN                |
| Attorney Docket Number | CONT-17321892          |

**CERTIFICATION STATEMENT**

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                 |                     |            |
|------------|-----------------|---------------------|------------|
| Signature  | /John P. Keady/ | Date (YYYY-MM-DD)   | 2022-06-30 |
| Name/Print | John P. Keady   | Registration Number | 56389      |

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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## Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

# PE2E SEARCH - Search History (Prior Art)

| Ref # | Hits | Search Query                                                                                                                                                                                                                                                                                                                                                                                                                   | DBs                                                                 | Default Operator | Plurals | British Equivalents | Time Stamp             |
|-------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------|---------|---------------------|------------------------|
| L1    | 5    | "11244666".pn. OR<br>"10810989".pn. OR<br>"10535334".pn. OR<br>"10134377".pn. OR<br>"8917894".pn.                                                                                                                                                                                                                                                                                                                              | (USPAT)                                                             | OR               | ON      | ON                  | 2022/12/16<br>07:39 AM |
| L2    | 0    | (Stanton near4<br>techiya).as. or (Steven<br>near4 Goldstein).in. or<br>(john near4 Beer).in. or<br>(Marc near4 Boillot).in.                                                                                                                                                                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L3    | 0    | ((((((((G10K11/17827))))))<br>))).cpc. or<br>((((((((G10K11/002))))))<br>)).cpc. or<br>((((((((H04R1/1016))))))<br>)).cpc. or<br>((((((((H04R1/1083))))))<br>)).cpc. or<br>((((((((H04R3/002))))))<br>)).cpc. or<br>((((((((H04R3/005))))))<br>)).cpc. or<br>((((((((H04R29/001))))))<br>)).cpc. or<br>((((((((H04R2225/41))))<br>))).cpc. or<br>((((((((H04R2460/05))))<br>))).cpc. or<br>((((((((H04R2499/11))))<br>))).cpc. | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L4    | 0    | L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L5    | 0    | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L6    | 0    | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L7    | 0    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |

|     |   |                                                                                                                                                                                                                         |                                                            |    |    |    |                     |
|-----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L8  | 0 | L7 and L4                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L9  | 0 | L7 not L8                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L10 | 0 | 8150044.pn.                                                                                                                                                                                                             | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L11 | 0 | ("8150044")[URPN]                                                                                                                                                                                                       | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L12 | 0 | ("8150044")[PN]                                                                                                                                                                                                         | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L13 | 0 | (20080037801   6728385   20070160243   20040037428   20070223717   6023517   20050111683   20080137873   5251263   4837832   5867581   20060262938   8059847   20050254665   20050105750   20040234089   6415034)! [PN] | (US-PGPUB; USPAT)                                          | OR | ON | ON | 2021/11/03 09:04 AM |
| L14 | 0 | L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))                                                                                      | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L15 | 0 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L16 | 0 | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L17 | 0 | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L18 | 0 | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |

|     |   |                                                                                                                                                                                  |                                                                     |    |    |    |                        |
|-----|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L19 | 0 | ambulance)) same<br>(((turn adj3 down) or<br>mute) with audio or<br>misic)<br>((detect\$3 or sensing)<br>with siren) same (((turn<br>adj3 down) or mute)<br>with audio or misic) | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L20 | 0 | ((detect\$3 or sensing)<br>with ((emergency adj3<br>vehicle) or warning or<br>police or siren or<br>ambulance)) same<br>(((turn adj3 down) or<br>mute) with audio or<br>misic)   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L21 | 0 | L20 not L19                                                                                                                                                                      | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L22 | 0 | (asm or (ambient adj3<br>microphone)) same<br>(ecm or (ear adj3 canal<br>adj3 microphone))                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L23 | 0 | L22 and L6                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L24 | 0 | L23 and ((gain or<br>multiplier) with (ambient<br>or surround or<br>environmental) with<br>sound)                                                                                | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L25 | 0 | 8577052.pn. or<br>5541359.pn. or<br>5774567.pn. or<br>7421084.pn. or<br>7903826.pn. or<br>7986802.pn. or<br>8199942.pn. or<br>10361673.pn.                                       | (USPAT)                                                             | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L26 | 0 | 20050207597 or<br>20030035551 or<br>20080165988 or<br>20030151678 or<br>20060222185                                                                                              | (US-PGPUB)                                                          | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L27 | 0 | 5299030                                                                                                                                                                          | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L28 | 0 | 101401399                                                                                                                                                                        | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |

|     |       |                                                                                                                                                                                                                                                                                   |                                                            |    |    |    |                     |
|-----|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L29 | 0     | 37603455.FMID.                                                                                                                                                                                                                                                                    | (USPAT; JPO; FPRS; US-PGPUB)                               | OR | ON | ON | 2021/11/03 09:04 AM |
| L30 | 0     | ecm or (ear adj4 canal adj4 microphone)                                                                                                                                                                                                                                           | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L31 | 0     | L30 and (L25 or L26 or L27 or L28)                                                                                                                                                                                                                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L32 | 0     | L30 and ((gain or multiplier or weight\$3 or factor) with (ambient or surround or environmental) with (acoustic or sound))                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L33 | 0     | L32 and ((mix\$3 or combin\$3 or blend\$3) with (audio or music or source))                                                                                                                                                                                                       | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L34 | 0     | L33 and (earbud or headphone or headset or earpiece)                                                                                                                                                                                                                              | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L35 | 0     | 20080165988                                                                                                                                                                                                                                                                       | (US-PGPUB)                                                 | OR | ON | ON | 2021/11/03 09:04 AM |
| L36 | 0     | L35 and (earbud or headphone or headset or earpiece)                                                                                                                                                                                                                              | (US-PGPUB)                                                 | OR | ON | ON | 2021/11/03 09:04 AM |
| L37 | 5     | "11244666".pn. OR "10810989".pn. OR "10535334".pn. OR "10134377".pn. OR "8917894".pn.                                                                                                                                                                                             | (USPAT)                                                    | OR | ON | ON | 2022/12/16 07:41 AM |
| L38 | 1262  | (Stanton near4 techiya).as. or (Steven near4 Goldstein).in. or (john near4 Beer).in. or (Marc near4 Boillot).in.                                                                                                                                                                  | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L39 | 94232 | ((((((((G10K11/17827)))))))).cpc. or (((((((G10K11/002)))))))).cpc. or (((((((H04R1/1016)))))))).cpc. or (((((((H04R1/1083)))))))).cpc. or (((((((H04R3/002)))))))).cpc. or (((((((H04R3/005)))))))).cpc. or (((((((H04R29/001)))))))).cpc. or (((((((H04R2225/41)))))))).cpc. or | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |

|     |        |                                                                                                                                                                                                                                                                      |                                                                     |    |    |    |                        |
|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L40 | 531846 | (((H04R2460/05))))<br>)).cpc. or<br>(((H04R2499/11))))<br>)).cpc.<br>L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                             | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L41 | 10     | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L42 | 1169   | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L43 | 373    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L44 | 81     | L7 and L4                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L45 | 292    | L7 not L8                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L46 | 1      | 8150044.pn.                                                                                                                                                                                                                                                          | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L47 | 39     | ("8150044")[URPN]                                                                                                                                                                                                                                                    | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L48 | 1      | ("8150044")[PN]                                                                                                                                                                                                                                                      | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L49 | 17     | (20080037801  <br>6728385  <br>20070160243  <br>20040037428  <br>20070223717  <br>6023517  <br>20050111683  <br>20080137873  <br>5251263   4837832  <br>5867581  <br>20060262938  <br>8059847  <br>20050254665  <br>20050105750  <br>20040234089  <br>6415034)! [PN] | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2022/12/16<br>07:41 AM |

|     |     |                                                                                                                                                                           |                                                            |    |    |    |                     |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L50 | 247 | L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))                                        | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L51 | 840 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                     | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L52 | 46  | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L53 | 2   | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L54 | 3   | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic) | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L55 | 20  | ((detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L56 | 67  | ((detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic)                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L57 | 47  | L20 not L19                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L58 | 609 | (asm or (ambient adj3 microphone)) same (ecm or (ear adj3 canal adj3 microphone))                                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L59 | 148 | L22 and L6                                                                                                                                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L60 | 56  | L23 and ((gain or multiplier) with (ambient                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO;                         | OR | ON | ON | 2022/12/16 07:41 AM |

|     |       |                                                                                                                                                                                         |                                                                     |    |    |    |                        |
|-----|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L61 | 8     | or surround or environmental) with sound)<br>8577052.pn. or<br>5541359.pn. or<br>5774567.pn. or<br>7421084.pn. or<br>7903826.pn. or<br>7986802.pn. or<br>8199942.pn. or<br>10361673.pn. | DERWENT; IBM_TDB;<br>FPRS)<br>(USPAT)                               | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L62 | 5     | 20050207597 or<br>20030035551 or<br>20080165988 or<br>20030151678 or<br>20060222185                                                                                                     | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L63 | 13    | 5299030                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L64 | 21    | 101401399                                                                                                                                                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L65 | 9     | 37603455.FMID.                                                                                                                                                                          | (USPAT; JPO; FPRS;<br>US-PGPUB)                                     | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L66 | 86148 | ecm or (ear adj4 canal<br>adj4 microphone)                                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L67 | 4     | L30 and (L25 or L26 or<br>L27 or L28)                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L68 | 316   | L30 and ((gain or<br>multiplier or weight\$3 or<br>factor) with (ambient or<br>surround or<br>environmental) with<br>(acoustic or sound))                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L69 | 139   | L32 and ((mix\$3 or<br>conbin\$3 or blend\$3)<br>with (audio or music or<br>source))                                                                                                    | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L70 | 139   | L33 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L71 | 1     | 20080165988                                                                                                                                                                             | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L72 | 1     | L35 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                              | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L73 | 3349  | ("20100296668" "60213                                                                                                                                                                   | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2022/12/16             |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |          |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|----------|
|  |  | 25" "6163508" "680464<br>3" "8611560" "2003015<br>2359" "20040109579" "<br>20050078838" "200600<br>83390" "20060188105" "<br>"20060264176" "20140<br>023203" "20150215701<br>" "5267321" "6021207" "<br>6606598" "6639987" "7<br>072482" "8160261" "87<br>98278" "20050058313" "<br>"20050288057" "20070<br>043563" "20090010456<br>" "20090024234" "3876<br>843" "6298323" "67482<br>38" "7562020" "849320<br>4" "9037458" "2011011<br>6643" "20140163976" "<br>5933510" "7464029" "7<br>477756" "8254591" "20<br>070291953" "20080165<br>988" "5208867" "65675<br>24" "6804638" "743029<br>9" "7433714" "8750295"<br> "20040264938" "20060<br>188075" "20080037801<br>" "6728385" "6754359" "<br>8917894" "9196247" "2<br>0010046304" "2004019<br>6992" "20060092043" "<br>20070189544" "201401<br>22092" "5903868" "913<br>5797" "20040086138" "<br>20060140425" "200901<br>22996" "6005525" "611<br>8877" "7903825" "8983<br>081" "20020106091" "2<br>0040042103" "2004020<br>3351" "20060173563" "<br>20060195322" "200700<br>86600" "20090076821" "<br>"6163338" "6661901" "9<br>123343" "20070036377<br>" "20080137873" "5923<br>624" "6415034" "74507<br>30" "8014553" "816027<br>3" "9491542" "2004012<br>5965" "20040190737" "<br>20050123146" "405474<br>9" "6226389" "7107109"<br> "7756285" "200301653<br>19" "20060204014" "20<br>080145032" "4088849" "<br>"7778434" "8625818" "8<br>718305" "RE38351" "20<br>100061564" "20110096<br>939" "20110264447" "4<br>947440" "7158933" "79 |  |  |  |  | 08:41 AM |
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|     |        |                                                                                                                                                                                                                                                                                                                                                                                                      |                   |    |    |    |                     |
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|     |        | 20557" "20020098878" "20050028212" "6359993" "7983907" "8140325" "8401200" "8045840" "20020118798" "20030161097" "20030165246" "20040109668" "20060067551" "20060083395" "20090286515" "20110293103" "20160104452" "6400652" "20020076057" "20020165719" "20050068171" "20060167687" "20070003090" "20070255435" "5327506" "5524056" "7039585" "7050592" "7209569" "7574917" "8086093" "8218784").PN |                   |    |    |    |                     |
| L74 | 329546 | mix\$3 near4 (value OR ratio)                                                                                                                                                                                                                                                                                                                                                                        | (US-PGPUB; USPAT) | OR | ON | ON | 2022/12/16 08:43 AM |
| L75 | 44     | L74 AND I73                                                                                                                                                                                                                                                                                                                                                                                          | (US-PGPUB; USPAT) | OR | ON | ON | 2022/12/16 08:43 AM |

#### PE2E SEARCH - Search History (Interference)

| Ref # | Hits | Search Query                                                                                                                       | DBs               | Default Operator | Plurals | British Equivalents | Time Stamp          |
|-------|------|------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------|---------|---------------------|---------------------|
| N1    | 0    | (earphone and microphone and ambient and (ear adj3 canal) and speaker and memory and processor and gain and mixing and audio).clm. | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2021/11/03 09:04 AM |

Doc code: IDS

PTO/SB/08a (02-18)

Doc description: Information Disclosure Statement (IDS) Filed

Approved for use through 11/30/2020. OMB 0651-0031

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| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     |                        |
|                                                                                                     | Filing Date            |                        |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               |                        |
|                                                                                                     | Examiner Name          | Unknown                |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |

| U.S.PATENTS       |         |               |                        |            |                                                 | Remove                                                                   |
|-------------------|---------|---------------|------------------------|------------|-------------------------------------------------|--------------------------------------------------------------------------|
| Examiner Initial* | Cite No | Patent Number | Kind Code <sup>1</sup> | Issue Date | Name of Patentee or Applicant of cited Document | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear |
|                   | 1       | 8638239       |                        | 2014-01-28 | Cases; Fabien et al.                            |                                                                          |
|                   | 2       | 6226389       |                        | 2001-05-01 | Lemelson et al.                                 |                                                                          |
|                   | 3       | 8514100       |                        | 2013-08-20 | Yamashita; Youji                                |                                                                          |
|                   | 4       | 8493204       |                        | 2013-07-23 | Wong, et al.                                    |                                                                          |
|                   | 5       | 9648436       |                        | 2017-05-09 | Doppler Labs, Inc.                              |                                                                          |
|                   | 6       | 9041545       |                        | 2015-05-26 | Zelepugas; Eric Allen                           |                                                                          |
|                   | 7       | 5208867       |                        | 1993-05-04 | Stites, George M. III                           |                                                                          |
|                   | 8       | 8792648       |                        | 2014-07-29 | Kim; Hee Young                                  |                                                                          |

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.L.S/

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|------------------------|------------------------|--|
| Application Number     |                        |  |
| Filing Date            |                        |  |
| First Named Inventor   | Steven Wayne Goldstein |  |
| Art Unit               |                        |  |
| Examiner Name          | Unknown                |  |
| Attorney Docket Number | CONT-17321892          |  |

|  |   |         |  |            |                |  |
|--|---|---------|--|------------|----------------|--|
|  | 9 | 6023517 |  | 2000-02-08 | Shige; Ryuichi |  |
|--|---|---------|--|------------|----------------|--|

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|-------------------|---------|--------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|
|                   | 1       | 20170124847        |                        | 2017-05-04       | Sigh, LLC                                       |                                                                          |
|                   | 2       | 20060253282        |                        | 2006-11-09       | Gerhard Uwe Schmidt et al.                      |                                                                          |
|                   | 3       | 20140185828        |                        | 2014-07-03       | Cellco Partnership                              |                                                                          |
|                   | 4       | 20020135485        |                        | 2002-09-26       | Kaoru Arakawa                                   |                                                                          |
|                   | 5       | 20100136950        |                        | 2010-06-03       | Erik Johan Vendel Backlund et al.               |                                                                          |
|                   | 6       | 20040179694        |                        | 2004-09-16       | Alley, Kenneth A.                               |                                                                          |
|                   | 7       | 20160249128        |                        | 2016-08-25       | Steven Wayne Goldstein                          |                                                                          |
|                   | 8       | 20070147635        |                        | 2007-06-28       | Dijkstra; Evert                                 |                                                                          |

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|------------------------|------------------------|--|
| Application Number     |                        |  |
| Filing Date            |                        |  |
| First Named Inventor   | Steven Wayne Goldstein |  |
| Art Unit               |                        |  |
| Examiner Name          | Unknown                |  |
| Attorney Docket Number | CONT-17321892          |  |

|    |             |            |                     |
|----|-------------|------------|---------------------|
| 9  | 20060262938 | 2006-11-23 | Gauger; Daniel M.   |
| 10 | 20110069845 | 2011-03-24 | Cohen; Alexander J. |
| 11 | 20080240458 | 2008-10-02 | Goldstein; Steven W |

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|                    |                                 |                 |            |
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| Examiner Signature | /ANDREW L SNIEZEK/ (12/16/2022) | Date Considered | 12/16/2022 |
|--------------------|---------------------------------|-----------------|------------|

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|                                                                                                     | Filing Date            |                        |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               |                        |
|                                                                                                     | Examiner Name          | Unknown                |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |

<sup>1</sup> See Kind Codes of USPTO Patent Documents at [www.USPTO.GOV](http://www.USPTO.GOV) or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.

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STATEMENT BY APPLICANT**  
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|                        |                        |
|------------------------|------------------------|
| Application Number     |                        |
| Filing Date            |                        |
| First Named Inventor   | Steven Wayne Goldstein |
| Art Unit               |                        |
| Examiner Name          | Unknown                |
| Attorney Docket Number | CONT-17321892          |

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That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                 |                     |            |
|------------|-----------------|---------------------|------------|
| Signature  | /John P. Keady/ | Date (YYYY-MM-DD)   | 2020-08-07 |
| Name/Print | John P. Keady   | Registration Number | 56389      |

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

## Main Concept Text

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A wearable device that can control ambient pass through in an earpiece comprising: a display; a first memory that stores instructions; and a processor configured to execute the instructions to perform operations, the operations comprising: communicatively connecting to an earpiece, wherein the earpiece includes a first microphone, a second microphone, a speaker, a second memory and an earpiece processor; sending a mixing value to the earpiece; and sending an audio content signal to the earpiece, wherein the earpiece processor is configured to mix an ambient sound signal with the audio content signal based upon the mixing value.

(No Concept Modifiers)

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(No Filters)

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Options

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De-dup: None

Relevance Cut-off: None

Sort: Relevance

Content: Non-Patent Literature (23)

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IEEE Xplore Publications: IEEE Periodicals  
IEEE Xplore Publications: IEEE Conferences  
IEEE Xplore Publications: IEEE Standards  
IEEE Xplore Publications: IEEE Early Access  
IEEE Xplore Publications: SMPTE Periodicals  
IEEE Xplore Publications: SMPTE Conferences  
IEEE Xplore Publications: SMPTE Standards  
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IP.com Prior Art Database: Legacy Journals  
IP.com Prior Art Database: Software Patent Institute  
OnePetro.org: Periodicals at OnePetro.org  
OnePetro.org: Conferences at OnePetro.org  
Other Literature: IBM Redbooks  
Other Literature: PubMed Central  
Other Literature: arXiv.org

## Bibliographic Data

Application No: 17/592,143

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /ANDREW L SNIEZEK/

Examiner's Signature

Initials

Title:

METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION

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| FILING or 371(c) DATE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|-----------------------|-------|----------------|---------------------|
| 02/03/2022            | 381   | 2688           | CONT-17321892       |
| RULE                  |       |                |                     |

### APPLICANTS

Staton Techiya LLC, Delray Beach, FL,

### INVENTORS

Steven Wayne Goldstein, Delray Beach, FL, UNITED STATES

John Usher, Beer, UNITED KINGDOM

Marc Andre Boillot, Plantation, FL, UNITED STATES

### CONTINUING DATA

This application is a CON of 17321892 05/17/2021

17321892 is a CON of 16987396 08/07/2020 PAT 11244666

16987396 is a CON of 16669490 10/30/2019 PAT 10810989

16669490 is a CON of 16193568 11/16/2018 PAT 10535334

16193568 is a CON of 14574589 12/18/2014 PAT 10134377

14574589 is a CON of 12017878 01/22/2008 PAT 8917894

12017878 has PRO of 60885917 01/22/2007

### FOREIGN APPLICATIONS

#### IF REQUIRED, FOREIGN LICENSE GRANTED\*\*

02/08/2022

\*\* SMALL ENTITY \*\*

### STATE OR COUNTRY

UNITED STATES

### ADDRESS

Akerman LLP  
777 South Flagler Drive  
Suite 1100 West Tower

West Palm Beach, FL 33401

UNITED STATES

**FILING FEE RECEIVED**

\$830

## PE2E SEARCH - Search History (Prior Art)

| Ref # | Hits | Search Query                                                                                                                                                                                                                                                                                                                                                          | DBs                                                                 | Default Operator | Plurals | British Equivalents | Time Stamp             |
|-------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------|---------|---------------------|------------------------|
| L1    | 5    | "11244666".pn. OR<br>"10810989".pn. OR<br>"10535334".pn. OR<br>"10134377".pn. OR<br>"8917894".pn.                                                                                                                                                                                                                                                                     | (USPAT)                                                             | OR               | ON      | ON                  | 2022/12/16<br>07:39 AM |
| L2    | 0    | (Stanton near4<br>techiya).as. or (Steven<br>near4 Goldstein).in. or<br>(john near4 Beer).in. or<br>(Marc near4 Boillot).in.                                                                                                                                                                                                                                          | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L3    | 0    | (((((G10K11/17827))))<br>)).cpc. or<br>(((((G10K11/002))))<br>).cpc. or<br>(((((H04R1/1016))))<br>).cpc. or<br>(((((H04R1/1083))))<br>).cpc. or<br>(((((H04R3/002))))<br>).cpc. or<br>(((((H04R3/005))))<br>).cpc. or<br>(((((H04R29/001))))<br>).cpc. or<br>(((((H04R2225/41))))<br>).cpc. or<br>(((((H04R2460/05))))<br>).cpc. or<br>(((((H04R2499/11))))<br>).cpc. | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L4    | 0    | L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                                                                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L5    | 0    | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                                                                                                                        | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L6    | 0    | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L7    | 0    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                                                                                                                        | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |

|     |   |                                                                                                                                                                                                                         |                                                            |    |    |    |                     |
|-----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L8  | 0 | L7 and L4                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L9  | 0 | L7 not L8                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L10 | 0 | 8150044.pn.                                                                                                                                                                                                             | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L11 | 0 | ("8150044")[URPN]                                                                                                                                                                                                       | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L12 | 0 | ("8150044")[PN]                                                                                                                                                                                                         | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L13 | 0 | (20080037801   6728385   20070160243   20040037428   20070223717   6023517   20050111683   20080137873   5251263   4837832   5867581   20060262938   8059847   20050254665   20050105750   20040234089   6415034)! [PN] | (US-PGPUB; USPAT)                                          | OR | ON | ON | 2021/11/03 09:04 AM |
| L14 | 0 | L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))                                                                                      | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L15 | 0 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L16 | 0 | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L17 | 0 | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L18 | 0 | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |

|     |   |                                                                                                                                                                                    |                                                                     |    |    |    |                        |
|-----|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L19 | 0 | ambulance)) same<br>(((turn adj3 down) or<br>mute) with audio or<br>mistic)<br>((detect\$3 or sensing)<br>with siren) same (((turn<br>adj3 down) or mute)<br>with audio or mistic) | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L20 | 0 | ((detect\$3 or sensing)<br>with ((emergency adj3<br>vehicle) or warning or<br>police or siren or<br>ambulance)) same<br>(((turn adj3 down) or<br>mute) with audio or<br>mistic)    | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L21 | 0 | L20 not L19                                                                                                                                                                        | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L22 | 0 | (asm or (ambient adj3<br>microphone)) same<br>(ecm or (ear adj3 canal<br>adj3 microphone))                                                                                         | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L23 | 0 | L22 and L6                                                                                                                                                                         | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L24 | 0 | L23 and ((gain or<br>multiplier) with (ambient<br>or surround or<br>environmental) with<br>sound)                                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L25 | 0 | 8577052.pn. or<br>5541359.pn. or<br>5774567.pn. or<br>7421084.pn. or<br>7903826.pn. or<br>7986802.pn. or<br>8199942.pn. or<br>10361673.pn.                                         | (USPAT)                                                             | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L26 | 0 | 20050207597 or<br>20030035551 or<br>20080165988 or<br>20030151678 or<br>20060222185                                                                                                | (US-PGPUB)                                                          | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L27 | 0 | 5299030                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L28 | 0 | 101401399                                                                                                                                                                          | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |

|     |       |                                                                                                                                                                                                                                                                                    |                                                            |    |    |    |                     |
|-----|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L29 | 0     | 37603455.FMID.                                                                                                                                                                                                                                                                     | (USPAT; JPO; FPRS; US-PGPUB)                               | OR | ON | ON | 2021/11/03 09:04 AM |
| L30 | 0     | ecm or (ear adj4 canal adj4 microphone)                                                                                                                                                                                                                                            | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L31 | 0     | L30 and (L25 or L26 or L27 or L28)                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L32 | 0     | L30 and ((gain or multiplier or weight\$3 or factor) with (ambient or surround or environmental) with (acoustic or sound))                                                                                                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L33 | 0     | L32 and ((mix\$3 or combin\$3 or blend\$3) with (audio or music or source))                                                                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L34 | 0     | L33 and (earbud or headphone or headset or earpiece)                                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L35 | 0     | 20080165988                                                                                                                                                                                                                                                                        | (US-PGPUB)                                                 | OR | ON | ON | 2021/11/03 09:04 AM |
| L36 | 0     | L35 and (earbud or headphone or headset or earpiece)                                                                                                                                                                                                                               | (US-PGPUB)                                                 | OR | ON | ON | 2021/11/03 09:04 AM |
| L37 | 5     | "11244666".pn. OR "10810989".pn. OR "10535334".pn. OR "10134377".pn. OR "8917894".pn.                                                                                                                                                                                              | (USPAT)                                                    | OR | ON | ON | 2022/12/16 07:41 AM |
| L38 | 1262  | (Stanton near4 techiya).as. or (Steven near4 Goldstein).in. or (john near4 Beer).in. or (Marc near4 Boillot).in.                                                                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L39 | 94232 | (((((((((G10K11/17827)))))))).cpc. or (((((((G10K11/002)))))))).cpc. or (((((((H04R1/1016)))))))).cpc. or (((((((H04R1/1083)))))))).cpc. or (((((((H04R3/002)))))))).cpc. or (((((((H04R3/005)))))))).cpc. or (((((((H04R29/001)))))))).cpc. or (((((((H04R2225/41)))))))).cpc. or | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |

|     |        |                                                                                                                                                                                                                                                                      |                                                                     |    |    |    |                        |
|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L40 | 531846 | (((H04R2460/05))))<br>)).cpc. or<br>(((H04R2499/11))))<br>)).cpc.<br>L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                             | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L41 | 10     | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L42 | 1169   | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L43 | 373    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L44 | 81     | L7 and L4                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L45 | 292    | L7 not L8                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L46 | 1      | 8150044.pn.                                                                                                                                                                                                                                                          | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L47 | 39     | ("8150044")[URPN]                                                                                                                                                                                                                                                    | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L48 | 1      | ("8150044")[PN]                                                                                                                                                                                                                                                      | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L49 | 17     | (20080037801  <br>6728385  <br>20070160243  <br>20040037428  <br>20070223717  <br>6023517  <br>20050111683  <br>20080137873  <br>5251263   4837832  <br>5867581  <br>20060262938  <br>8059847  <br>20050254665  <br>20050105750  <br>20040234089  <br>6415034)! [PN] | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2022/12/16<br>07:41 AM |

|     |     |                                                                                                                                                                           |                                                            |    |    |    |                     |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L50 | 247 | L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))                                        | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L51 | 840 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                     | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L52 | 46  | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L53 | 2   | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L54 | 3   | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic) | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L55 | 20  | ((detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L56 | 67  | ((detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic)                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L57 | 47  | L20 not L19                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L58 | 609 | (asm or (ambient adj3 microphone)) same (ecm or (ear adj3 canal adj3 microphone))                                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L59 | 148 | L22 and L6                                                                                                                                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L60 | 56  | L23 and ((gain or multiplier) with (ambient                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO;                         | OR | ON | ON | 2022/12/16 07:41 AM |

|     |       |                                                                                                                                                                                         |                                                                     |    |    |    |                        |
|-----|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L61 | 8     | or surround or environmental) with sound)<br>8577052.pn. or<br>5541359.pn. or<br>5774567.pn. or<br>7421084.pn. or<br>7903826.pn. or<br>7986802.pn. or<br>8199942.pn. or<br>10361673.pn. | DERWENT; IBM_TDB;<br>FPRS)<br>(USPAT)                               | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L62 | 5     | 20050207597 or<br>20030035551 or<br>20080165988 or<br>20030151678 or<br>20060222185                                                                                                     | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L63 | 13    | 5299030                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L64 | 21    | 101401399                                                                                                                                                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L65 | 9     | 37603455.FMID.                                                                                                                                                                          | (USPAT; JPO; FPRS;<br>US-PGPUB)                                     | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L66 | 86148 | ecm or (ear adj4 canal<br>adj4 microphone)                                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L67 | 4     | L30 and (L25 or L26 or<br>L27 or L28)                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L68 | 316   | L30 and ((gain or<br>multiplier or weight\$3 or<br>factor) with (ambient or<br>surround or<br>environmental) with<br>(acoustic or sound))                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L69 | 139   | L32 and ((mix\$3 or<br>conbin\$3 or blend\$3)<br>with (audio or music or<br>source))                                                                                                    | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L70 | 139   | L33 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L71 | 1     | 20080165988                                                                                                                                                                             | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L72 | 1     | L35 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                              | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L73 | 3349  | ("20100296668" "60213                                                                                                                                                                   | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2022/12/16             |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |          |
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| L74 | 329546 | mix\$3 near4 (value OR ratio)                                                                                                                                                                                                                                                                                                                                                                        | (US-PGPUB; USPAT) | OR | ON | ON | 2022/12/16 08:43 AM |
| L75 | 44     | L74 AND I73                                                                                                                                                                                                                                                                                                                                                                                          | (US-PGPUB; USPAT) | OR | ON | ON | 2022/12/16 08:43 AM |

#### PE2E SEARCH - Search History (Interference)

| Ref # | Hits | Search Query                                                                                                                       | DBs               | Default Operator | Plurals | British Equivalents | Time Stamp          |
|-------|------|------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------|---------|---------------------|---------------------|
| N1    | 0    | (earphone and microphone and ambient and (ear adj3 canal) and speaker and memory and processor and gain and mixing and audio).clm. | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2021/11/03 09:04 AM |

## Main Concept Text

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A wearable device comprising a first microphone configured to measure a first acoustic environment to generate a first microphone signal; a second microphone configured to be positioned closer to a user's ear canal than the first microphone when the device is worn, where the second microphone is configured to generate a second microphone signal; a speaker; a memory that stores instructions; and a processor configured to execute the instructions to perform operations, the operations comprising: receiving an audio content signal; modifying the audio content signal to generate a modified audio content signal; modifying the first microphone signal to generate a modified first microphone signal; modifying the second microphone signal to generate a modified second microphone signal; generating an ambient sound signal from at least one of the modified first microphone signal, the modified second microphone signal or a combination of both; detecting an acute sound by analyzing at least one of the modified first microphone signal, the modified second microphone signal or both, and if an acute sound is detected, determining whether the acute sound is a user's voice; generating a mixed signal by mixing the ambient sound signal with the modified audio content signal, and if a user's voice is detected modifying the modified audio content signal before forming the mixed signal; and sending the mixed signal to the speaker.

(No Concept Modifiers)

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(No Filters)

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## Options

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De-dup: None

Relevance Cut-off: None

Sort: Relevance

## Content: Non-Patent Literature (23)

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PTO/SB/08a (02-18)

Doc description: Information Disclosure Statement (IDS) Filed

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|                                                                                                     | Filing Date            |                        |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | OPAP                   |
|                                                                                                     | Examiner Name          | UNKNOWN                |
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| Examiner Name          | UNKNOWN                |  |
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|-------------------|---------|--------------------------------------|----------------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|----------------|
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|                                                                                                     | Examiner Name          | UNKNOWN                |  |
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|                    |                                 |                 |            |
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|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |  |
|                                                                                                     | Art Unit               | OPAP                   |  |
|                                                                                                     | Examiner Name          | UNKNOWN                |  |
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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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**OR**

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                 |                     |            |
|------------|-----------------|---------------------|------------|
| Signature  | /John P. Keady/ | Date (YYYY-MM-DD)   | 2022-01-11 |
| Name/Print | John P. Keady   | Registration Number | 56389      |

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Doc code: IDS

PTO/SB/08a (02-18)

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| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | OPAP                   |
|                                                                                                     | Examiner Name          | UNKNOWN                |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |

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| Examiner Initial* | Cite No | Patent Number | Kind Code <sup>1</sup> | Issue Date | Name of Patentee or Applicant of cited Document | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear |
|                   | 1       | 6359993       |                        | 2002-03-19 | Brimhall                                        |                                                                          |
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| Attorney Docket Number | CONT-17321892          |

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|----|---------|------------|-----------|
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|-------------------|---------|--------------------------------------|-----------------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|----------------|
|                   | 1       | 2006054698                           | WO                          |                        |                  | Murata                                          |                                                                          |                |
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| 8 | 2012097150 | WO |  |  | Usher |  |  |

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| Examiner Signature | /ANDREW L. SNIEZEK/ (12/16/2022) | Date Considered | 12/16/2022 |
|--------------------|----------------------------------|-----------------|------------|

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| Examiner Name          | UNKNOWN                |
| Attorney Docket Number | CONT-17321892          |

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

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That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                 |                     |            |
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| Signature  | /John P. Keady/ | Date (YYYY-MM-DD)   | 2022-06-06 |
| Name/Print | John P. Keady   | Registration Number | 56389      |

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Attorney Docket No:  
11472-27-5\_CONT-17321892  
Customer Number: 150139

Date of Electronic Notification: 12/22/2022

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|                                                                                                                                 |                                                                                          | (Column 1)                                                                                                                                                                                                                    | (Column 2)   |                                            |               |                           |                     |                                       |  |
| FOR                                                                                                                             |                                                                                          | NUMBER FILED                                                                                                                                                                                                                  | NUMBER EXTRA |                                            | RATE (\$)     |                           | FEE (\$)            |                                       |  |
| <input type="checkbox"/> BASIC FEE<br>(37 CFR 1.16(a), (b), or (c))                                                             |                                                                                          | N/A                                                                                                                                                                                                                           | N/A          |                                            | N/A           |                           |                     |                                       |  |
| <input type="checkbox"/> SEARCH FEE<br>(37 CFR 1.16(k), (l), or (m))                                                            |                                                                                          | N/A                                                                                                                                                                                                                           | N/A          |                                            | N/A           |                           |                     |                                       |  |
| <input type="checkbox"/> EXAMINATION FEE<br>(37 CFR 1.16(o), (p), or (q))                                                       |                                                                                          | N/A                                                                                                                                                                                                                           | N/A          |                                            | N/A           |                           |                     |                                       |  |
| TOTAL CLAIMS<br>(37 CFR 1.16(j))                                                                                                |                                                                                          | minus 20 =                                                                                                                                                                                                                    | *            |                                            | x \$50 =      |                           |                     |                                       |  |
| INDEPENDENT CLAIMS<br>(37 CFR 1.16(h))                                                                                          |                                                                                          | minus 3 =                                                                                                                                                                                                                     | *            |                                            | x \$240 =     |                           |                     |                                       |  |
| <input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))                                                                  |                                                                                          | If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). |              |                                            |               |                           |                     |                                       |  |
| <input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))                                                      |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |                     |                                       |  |
| * If the difference in column 1 is less than zero, enter "0" in column 2.                                                       |                                                                                          |                                                                                                                                                                                                                               |              |                                            | TOTAL         |                           |                     |                                       |  |
| <b>APPLICATION AS AMENDED - PART II</b>                                                                                         |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |                     |                                       |  |
|                                                                                                                                 |                                                                                          | (Column 1)                                                                                                                                                                                                                    | (Column 2)   |                                            | (Column 3)    |                           |                     |                                       |  |
| AMENDMENT                                                                                                                       | 03/22/2023                                                                               | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              |              | HIGHEST NUMBER PREVIOUSLY PAID FOR         | PRESENT EXTRA | RATE (\$)                 | ADDITIONAL FEE (\$) |                                       |  |
|                                                                                                                                 | Total<br>(37 CFR 1.16(j))                                                                | * 20                                                                                                                                                                                                                          | Minus        | ** 20                                      | = 0           | x \$40 =                  | 0                   |                                       |  |
|                                                                                                                                 | Independent<br>(37 CFR 1.16(h))                                                          | * 2                                                                                                                                                                                                                           | Minus        | *** 3                                      | = 0           | x \$192 =                 | 0                   |                                       |  |
|                                                                                                                                 | <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |              |                                            |               |                           |                     |                                       |  |
|                                                                                                                                 | <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) |                                                                                                                                                                                                                               |              |                                            |               |                           |                     |                                       |  |
|                                                                                                                                 |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               | TOTAL ADD'L FEE           |                     | 0                                     |  |
| AMENDMENT                                                                                                                       |                                                                                          | (Column 1)                                                                                                                                                                                                                    | (Column 2)   |                                            | (Column 3)    |                           |                     |                                       |  |
|                                                                                                                                 |                                                                                          | CLAIMS REMAINING AFTER AMENDMENT                                                                                                                                                                                              |              | HIGHEST NUMBER PREVIOUSLY PAID FOR         | PRESENT EXTRA | RATE (\$)                 | ADDITIONAL FEE (\$) |                                       |  |
|                                                                                                                                 | Total<br>(37 CFR 1.16(j))                                                                | *                                                                                                                                                                                                                             | Minus        | **                                         | =             | x \$0 =                   |                     |                                       |  |
|                                                                                                                                 | Independent<br>(37 CFR 1.16(h))                                                          | *                                                                                                                                                                                                                             | Minus        | ***                                        | =             | x \$0 =                   |                     |                                       |  |
|                                                                                                                                 | <input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))                           |                                                                                                                                                                                                                               |              |                                            |               |                           |                     |                                       |  |
| <input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))                                        |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |                     |                                       |  |
|                                                                                                                                 |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               | TOTAL ADD'L FEE           |                     |                                       |  |
| * If the entry in column 1 is less than the entry in column 2, write "0" in column 3.                                           |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               | LIE                       |                     |                                       |  |
| ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".                                       |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               | /ALLYSON PURNELL/         |                     |                                       |  |
| *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".                                        |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |                     |                                       |  |
| The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1. |                                                                                          |                                                                                                                                                                                                                               |              |                                            |               |                           |                     |                                       |  |

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

|                                                                                                     |                        |                        |
|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | 2688                   |
|                                                                                                     | Examiner Name          | SNIEZEK, ANDREW L      |
|                                                                                                     | Attorney Docket Number | CONT-173218892         |

| U.S. PATENTS                                                                                               |         |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          | Remove                                                                   |                |
|------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------|-------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------|
| Examiner Initial*                                                                                          | Cite No | Patent Number                                                                                                                                                                                                                                                   | Kind Code <sup>1</sup>     | Issue Date             | Name of Patentee or Applicant of cited Document | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear |                                                                          |                |
|                                                                                                            | 1       |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          |                                                                          |                |
| If you wish to add additional U.S. Patent citation information please click the Add button.                |         |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          | Add                                                                      |                |
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| Examiner Initial*                                                                                          | Cite No | Publication Number                                                                                                                                                                                                                                              | Kind Code <sup>1</sup>     | Publication Date       | Name of Patentee or Applicant of cited Document | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear |                                                                          |                |
|                                                                                                            | 1       |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          |                                                                          |                |
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| FOREIGN PATENT DOCUMENTS                                                                                   |         |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          | Remove                                                                   |                |
| Examiner Initial*                                                                                          | Cite No | Foreign Document Number <sup>3</sup>                                                                                                                                                                                                                            | Country Code <sup>2i</sup> | Kind Code <sup>4</sup> | Publication Date                                | Name of Patentee or Applicant of cited Document                          | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear | T <sup>5</sup> |
|                                                                                                            | 1       |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          |                                                                          |                |
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|                                                                                                     |                        |                        |
|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | 2688                   |
|                                                                                                     | Examiner Name          | SNIEZEK, ANDREW L      |
|                                                                                                     | Attorney Docket Number | CONT-173218892         |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 90/019169, Samsung Electronics Co., Ltd. and Samsung Electronics, America, Inc., REQUEST FOR EX PARTE REEXAMINATION OF U.S. PATENT NO. 11,244,666 |
| If you wish to add additional non-patent literature document citation information please click the Add button <input type="button" value="Add"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                   |
| <b>EXAMINER SIGNATURE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                   |
| Examiner Signature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <div></div> <div>Date Considered</div> <div></div>                                                                                                |
| *EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                   |
| <small> <sup>1</sup> See Kind Codes of USPTO Patent Documents at <a href="http://www.USPTO.GOV">www.USPTO.GOV</a> or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.         </small> |                                                                                                                                                   |

|                                                                                                     |                        |                        |
|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | 2688                   |
|                                                                                                     | Examiner Name          | SNIEZEK, ANDREW L      |
|                                                                                                     | Attorney Docket Number | CONT-173218892         |

### CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

### SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                 |                     |            |
|------------|-----------------|---------------------|------------|
| Signature  | /John P. Keady/ | Date (YYYY-MM-DD)   | 2023-03-22 |
| Name/Print | John P. Keady   | Registration Number | 56389      |

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
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| Electronic Patent Application Fee Transmittal      |                 |                                                              |               |                             |
|----------------------------------------------------|-----------------|--------------------------------------------------------------|---------------|-----------------------------|
| <b>Application Number:</b>                         |                 | 17592143                                                     |               |                             |
| <b>Filing Date:</b>                                |                 | 03-Feb-2022                                                  |               |                             |
| <b>Title of Invention:</b>                         |                 | METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION |               |                             |
| <b>First Named Inventor/Applicant Name:</b>        |                 | Steven Wayne Goldstein                                       |               |                             |
| <b>Filer:</b>                                      |                 | John Patrick Keady                                           |               |                             |
| <b>Attorney Docket Number:</b>                     |                 | 11472-27-5_CONT-17321892                                     |               |                             |
| Filed as Small Entity                              |                 |                                                              |               |                             |
| <b>Filing Fees for Utility under 35 USC 111(a)</b> |                 |                                                              |               |                             |
| <b>Description</b>                                 | <b>Fee Code</b> | <b>Quantity</b>                                              | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                               |                 |                                                              |               |                             |
| <b>Pages:</b>                                      |                 |                                                              |               |                             |
| <b>Claims:</b>                                     |                 |                                                              |               |                             |
| <b>Miscellaneous-Filing:</b>                       |                 |                                                              |               |                             |
| <b>Petition:</b>                                   |                 |                                                              |               |                             |
| <b>Patent-Appeals-and-Interference:</b>            |                 |                                                              |               |                             |
| <b>Post-Allowance-and-Post-Issuance:</b>           |                 |                                                              |               |                             |
| <b>Extension-of-Time:</b>                          |                 |                                                              |               |                             |

| Description                             | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|-----------------------------------------|----------|----------|--------|----------------------|
| <b>Miscellaneous:</b>                   |          |          |        |                      |
| SUBMISSION- INFORMATION DISCLOSURE STMT | 2806     | 1        | 104    | 104                  |
| <b>Total in USD (\$)</b>                |          |          |        | <b>104</b>           |

| Electronic Acknowledgement Receipt          |                                                              |
|---------------------------------------------|--------------------------------------------------------------|
| <b>EFS ID:</b>                              | 47726231                                                     |
| <b>Application Number:</b>                  | 17592143                                                     |
| <b>International Application Number:</b>    |                                                              |
| <b>Confirmation Number:</b>                 | 3471                                                         |
| <b>Title of Invention:</b>                  | METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION |
| <b>First Named Inventor/Applicant Name:</b> | Steven Wayne Goldstein                                       |
| <b>Customer Number:</b>                     | 150139                                                       |
| <b>Filer:</b>                               | John Patrick Keady                                           |
| <b>Filer Authorized By:</b>                 |                                                              |
| <b>Attorney Docket Number:</b>              | 11472-27-5_CONT-17321892                                     |
| <b>Receipt Date:</b>                        | 22-MAR-2023                                                  |
| <b>Filing Date:</b>                         | 03-FEB-2022                                                  |
| <b>Time Stamp:</b>                          | 15:25:50                                                     |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                  |

### Payment information:

|                                                                                                                |                  |
|----------------------------------------------------------------------------------------------------------------|------------------|
| Submitted with Payment                                                                                         | yes              |
| Payment Type                                                                                                   | CARD             |
| Payment was successfully received in RAM                                                                       | \$104            |
| RAM confirmation Number                                                                                        | E20233LF27008316 |
| Deposit Account                                                                                                |                  |
| Authorized User                                                                                                |                  |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: |                  |

| File Listing:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                    |                                     |                                          |                  |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------|------------------------------------------|------------------|------------------|
| Document Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Document Description                               | File Name                           | File Size(Bytes)/ Message Digest         | Multi Part /.zip | Pages (if appl.) |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Applicant Arguments/Remarks Made in an Amendment   | 17592143_ROA_JPK.pdf                | 239037                                   | no               | 10               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                    |                                     | a0706d6e57eb6dadd1b56eb08128990dd80b5806 |                  |                  |
| Warnings:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                    |                                     |                                          |                  |                  |
| Information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |                                     |                                          |                  |                  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Information Disclosure Statement (IDS) Form (SB08) | IPR-RE-EXAM-IDS_2.pdf               | 1034421                                  | no               | 4                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                    |                                     | 829ed91b955e5300b59c029a163418aa367dd33c |                  |                  |
| Warnings:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                    |                                     |                                          |                  |                  |
| Information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |                                     |                                          |                  |                  |
| A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems. |                                                    |                                     |                                          |                  |                  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Non Patent Literature                              | US-pat-11244666-re-exam-request.pdf | 8328036                                  | no               | 148              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                    |                                     | 4a053905a800010ad308d226ee815fba6f62a007 |                  |                  |
| Warnings:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                    |                                     |                                          |                  |                  |
| Information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |                                     |                                          |                  |                  |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Fee Worksheet (SB06)                               | fee-info.pdf                        | 38163                                    | no               | 2                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                    |                                     | 6db4ad3d772615bb26c3b96583a378adaca07bc8 |                  |                  |
| Warnings:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                    |                                     |                                          |                  |                  |
| Information:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |                                     |                                          |                  |                  |
| Total Files Size (in bytes):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                    |                                     | 9639657                                  |                  |                  |

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**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                 |   |                                                                 |                       |
|-----------------|---|-----------------------------------------------------------------|-----------------------|
| APPLICATION NO. | : | 17/592,143                                                      | CONFIRMATION NO. 3471 |
| APPLICATION OF  | : | Steven Wayne Goldstein                                          |                       |
| DATE FILED      | : | 3 Feb. 2022                                                     |                       |
| EXAMINER        | : | SNIEZEK, ANDREW L                                               |                       |
| TC/A.U.         | : | 2688                                                            |                       |
| DOCKET          | : | CONT-173218892                                                  |                       |
| TITLE           | : | METHOD AND DEVICE FOR ACUTE SOUND<br>DETECTION AND REPRODUCTION |                       |

**RESPONSE TO OFFICE ACTION**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Date: March 22, 2023

Sir:

These remarks are filed in response to the Office Action dated 22 Dec. 2022.  
Please amend the above-identified patent application as follows:

- **Amendments to the Claims** begin on page 2 of this paper; and
- **Remarks/Arguments** begin on page 5 of this paper.

### **AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions, and listings, of claims in the application.

#### **Listing of Claims:**

1.(currently amended) A ~~wearable~~ device that can control ambient passthrough in an earpiece comprising:

a display;

a first memory that stores instructions; and

a processor ~~configured to that~~ executes the instructions to perform operations, the operations comprising:

communicatively connecting to an earpiece, wherein the earpiece includes a first microphone, a second microphone, a speaker, a second memory and an earpiece processor;

sending an audio content gain value and an ambient sound gain value ~~a mixing value~~ to the earpiece; and

sending an audio content signal to the earpiece, wherein the earpiece processor is configured to:

apply the audio content gain value to the audio content signal to generate a modified audio content signal;

apply the ambient sound gain value to an ambient sound signal to generate a modified ambient sound signal; and

mix ~~an~~ the modified ambient sound signal with the modified audio content signal to generate a mixed signal ~~based upon the mixing value.~~

2.(currently amended) The ~~wearable~~ device according to claim 1, wherein the earpiece processor is configured to calculate a noise level based upon a first microphone signal from the first microphone and vary the mixing ratio based upon the noise level.

3.(currently amended) The ~~wearable~~ device according to claim 1, wherein the earpiece processor is configured to generate the ambient sound signal from a first microphone signal from the first microphone.

4.(currently amended) The ~~wearable~~ device according to claim 1 further including a user interface.

5.(currently amended) The ~~wearable~~ device according to claim 1, wherein the earpiece processor is configured to apply an ambient gain to a first microphone signal from the first microphone to generate an ambient sound signal.

6.(currently amended) A ~~wearable~~ device that can control ambient sound passthrough comprising:

- a first microphone configured to measure a first acoustic environment to generate a first microphone signal;

- a second microphone configured to be positioned closer to a user's ear canal than the first microphone when the device is worn, where the second microphone is configured to generate a second microphone signal;

- a speaker;

- a memory that stores instructions; and

- a processor configured to execute the instructions to perform operations, the operations comprising:

- receiving an audio content signal;

- modifying the audio content signal to generate a modified audio content signal;

- modifying the first microphone signal to generate a modified first microphone signal;

modifying the second microphone signal to generate a modified second microphone signal;

generating an ambient sound signal from at least one of the modified first microphone signal, the modified second microphone signal or a combination of both;

detecting an acute sound by analyzing at least one of the modified first microphone signal, the modified second microphone signal or both; ~~and if an acute sound is detected, determining whether the acute sound is a user's voice;~~

modifying the modified audio content signal if an acute sound is detected to generate a new modified audio content signal;

generating a mixed signal by mixing the ambient sound signal with the modified audio content signal or the new modified audio content signal; ~~and if a user's voice is detected modifying the modified audio content signal before forming the mixed signal;~~ and

sending the mixed signal to the speaker.

7.(currently amended) The ~~wearable~~ device according to claim 6, wherein the operations further comprise:

determining if the acute sound is a user's voice by analyzing the temporal and spectral characteristics of at least one of the modified first microphone signal, the modified second microphone signal or a combination.

8.(currently amended) The ~~wearable~~ device according to claim 7, wherein the operations further comprise:

generating a noise signal from at least one of the modified first microphone signal, the modified second microphone signal, or both.

generating a noise reduction signal.

9.(currently amended) The ~~wearable~~ device according to claim 8, wherein the operations further comprise:

mixing the noise reduction signal with the mixed signal to generate a new mixed signal, and sending the new mixed signal to the speaker instead of the mixed signal.

10.(currently amended) The ~~wearable~~ device according to claim 9, wherein the operations further comprise:

sending a modified ambient signal to the speaker instead of the new mixed signal if the user's voice is detected.

11.(currently amended) The ~~wearable~~ device according to claim 7, wherein the operations further comprise:

sending a modified ambient signal to the speaker instead of the mixed signal if the user's voice is detected.

12.(currently amended) The ~~wearable~~ device according to claim 7, wherein the operations further comprise:

detecting whether the acute sound is at least one of a warning sound, siren, voice, specific noise type, or a combination, by analyzing the spectrum of at least one of the modified first microphone signal, the modified second microphone signal, the modified ambient sound signal, or a combination.

13.(currently amended) The ~~wearable~~ device according to claim 12, wherein the operations further comprise:

decreasing a volume of the modified audio content signal when a warning or siren is detected.

14.(currently amended) The ~~wearable~~ device according to claim 6, wherein the operations further comprise:

decreasing a volume of the modified audio content signal when a user's voice is detected.

15.(currently amended) The ~~wearable~~ device according to claim 12, where the operations further comprise:

sending a notification signal to the speaker if the acute sound is a warning sound or siren.

16.(currently amended) The ~~wearable~~ device according to claim 15, wherein the warning sound is at least one of a bell , an emergency vehicle , the sound of a security system or a combination thereof.

17.(currently amended) The ~~wearable~~ device according to claim 12, wherein if an alarm is detected it is at least one of a police siren, an ambulance siren, a car honking or a combination thereof.

18.(new) The device according to claim 1, wherein the device is a portable communication device.

19.(new) The device according to claim 18, where the device portable communication device is at least one of a phone, a watch, a tablet, earpiece, a laptop computer or a combination thereof.

20.(new) The device according to claim 6, wherein the acute sound is a voice.

### **REMARKS**

The foregoing amendments and the following remarks are made in response to the Office Action dated 22 Dec. 2022. At the time of the Office Action, the Examiner noted that claims 1-17 were pending. The Examiner rejected claims 1-17 under 35 U.S.C. § 112(a), as discussed in further detail below. Claims 1-17 have been amended, and claims 18-20 are new (support can be found [0013]). In view of the arguments set forth below, claims 1-20 are allowable, and the Examiner is respectfully requested to withdraw the rejection and issue a Notice of Allowance.

Note that Applicant may only discuss a single feature difference between the related art and pending claims, which should not be interpreted as Applicant accepting the related art as allegedly showing the remaining features.

#### **I. Priority and Pre-AIA Examination**

The present application is a continuation of U.S. App. No. 16/987,396 (U.S. Patent No. 11,244,666) which during the prosecution (10-25-2021) an earlier reduction to practice date and hence effective priority date of 18 Nov. 2006 was established. Applicant respectfully claims the same priority date (**18 Nov. 2006**) for the present application and additionally requests that the present application be examined under pre-AIA.

#### **II. Rejections Under 35 U.S.C. §112**

The Examiner rejected claims 1-17 under 35 U.S.C. §112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph as failing to comply with the enablement requirement.

The Examiner states:

“...Independent claim 1 sets forth a “mixing value” that is sent to the earpiece, and configured to mix based upon a “mixing value”. The written disclosure as filed does not even mention a “mixing value”, what structure is used to provide such a value, nor how such a value is used to mix the ambient sound signal and the audio content signal as set forth...”

*Office Action* at 2-3.

Applicant directs attention to amended part of claim 1 which states:

“...1.(currently amended) A ~~wearable~~ device that can control ambient passthrough in an earpiece comprising:  
a display;  
a first memory that stores instructions; and  
a processor ~~configured to that~~ executes the instructions to perform operations, the operations comprising:  
communicatively connecting to an earpiece, wherein the earpiece includes a first microphone, a second microphone, a speaker, a second memory and an earpiece processor;  
sending an audio content gain value and an ambient sound gain value ~~a mixing value~~ to the earpiece; and  
sending an audio content signal to the earpiece, wherein the earpiece processor is configured to:  
apply the audio content gain value to the audio content signal to generate a modified audio content signal;  
apply the ambient sound gain value to an ambient sound signal to generate a modified ambient sound signal; and  
mix ~~an the modified~~ the modified ambient sound signal with the modified audio content signal to generate a mixed signal ~~based upon the mixing value~~.  
...”

Support can at least be found in the specification [0069] and in Figure 9.

The Examiner also states:

“...Independent claim 6 sets forth that a mixed signal is generated by mixing ambient sound signal with a modified audio content signal and “if a user’s voice is detected modifying the modified audio content signal before forming the mixed signal”. The written disclosure as filed does not teach such an arrangement as set forth. ...”  
*Office Action* at 3.

Applicant directs attention to amended part of claim 6 which states:

“...6.(currently amended) A ~~wearable~~ device that can control ambient sound passthrough comprising:  
a first microphone configured to measure a first acoustic environment to generate a first microphone signal;

a second microphone configured to be positioned closer to a user's ear canal than the first microphone when the device is worn, where the second microphone is configured to generate a second microphone signal;

a speaker;

a memory that stores instructions; and

a processor configured to execute the instructions to perform operations, the operations comprising:

- receiving an audio content signal;
- modifying the audio content signal to generate a modified audio content signal;
- modifying the first microphone signal to generate a modified first microphone signal;
- modifying the second microphone signal to generate a modified second microphone signal;
- generating an ambient sound signal from at least one of the modified first microphone signal, the modified second microphone signal or a combination of both;
- detecting an acute sound by analyzing at least one of the modified first microphone signal, the modified second microphone signal or both; ~~and if an acute sound is detected, determining whether the acute sound is a user's voice;~~
- modifying the modified audio content signal if an acute sound is detected to generate a new modified audio content signal;
- generating a mixed signal by mixing the ambient sound signal with the modified audio content signal or the new modified audio content signal; ~~and if a user's voice is detected modifying the modified audio content signal before forming the mixed signal; and~~
- sending the mixed signal to the speaker...”

Support can at least be found in the specification [0012], [0036] and in Figure 2.

For at least these reasons, withdrawal of the enablement rejection is respectfully requested.

### III. Conclusion

For at least the reasons given above, claims 1-20 are allowable, and the Examiner is respectfully requested to withdraw all rejections. Should the Examiner believe that anything further is necessary, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

**TECHIYA LLC**

Date: March 22, 2023

/John P. Keady/  
John P. Keady  
Ph.D. (Physics), Ph.D. (Comp. Sci.)  
CTO and Assistant General Counsel of IP  
Reg. No. 56,389  
571-606-1291



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
**United States Patent and Trademark Office**  
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| APPLICATION NO.           | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|---------------------------|-------------|------------------------|--------------------------|------------------|
| 17/592,143                | 02/03/2022  | Steven Wayne Goldstein | 11472-27-5_CONT-17321892 | 3471             |
| 150139                    | 7590        | 04/20/2023             | EXAMINER                 |                  |
| Akerman LLP               |             |                        | SNIEZEK, ANDREW L        |                  |
| 777 South Flagler Drive   |             |                        |                          |                  |
| Suite 1100 West Tower     |             |                        |                          |                  |
| West Palm Beach, FL 33401 |             |                        |                          |                  |
|                           |             |                        | ART UNIT                 | PAPER NUMBER     |
|                           |             |                        | 2688                     |                  |
|                           |             |                        | NOTIFICATION DATE        | DELIVERY MODE    |
|                           |             |                        | 04/20/2023               | ELECTRONIC       |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@akerman.com  
jp.keady@techiya.co  
personics\_docketing@cardinal-ip.com

|                              |                                      |                                         |                                |
|------------------------------|--------------------------------------|-----------------------------------------|--------------------------------|
| <b>Office Action Summary</b> | <b>Application No.</b><br>17/592,143 | <b>Applicant(s)</b><br>Goldstein et al. |                                |
|                              | <b>Examiner</b><br>ANDREW SNIEZEK    | <b>Art Unit</b><br>2688                 | <b>AIA (FITF) Status</b><br>No |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 3/23/23.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims\*

- 5) ☒ Claim(s) 1-20 is/are pending in the application.  
5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☒ Claim(s) 1-20 is/are allowed.
- 7) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement

\* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

### Application Papers

- 10) ☒ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 4/11/22 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

#### Certified copies:

- a) ☐ All      b) ☐ Some\*\*      c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)  
Paper No(s)/Mail Date \_\_\_\_.
- 3) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Other: \_\_\_\_.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 11-13)

Office Action Summary

Part of Paper No./Mail Date 20230415

***Notice of Pre-AIA or AIA Status***

1. The present application is being examined under the pre-AIA first to invent provisions.

***Information Disclosure Statement***

2. The information disclosure statement filed 3/22/23 has been considered.

***Allowable Subject Matter/Reasons for allowance***

3. Claims 1-20 are allowed.

4. The following is an examiner's statement of reasons for allowance:

Boersma, considered to be the closest art of record teaches a device a processor (34) that is communicatively coupled to an earpiece (38) with the earpiece including a microphone (50) and a speaker (56); sending an audio content gain value and an ambient sound gain value to the ear piece (on line (88) after gain adjustments made by (84, 90), sending an audio content signal to the earpiece (by closing switch (70a) to directly sent audio on line (80) to the earpiece; applying an audio content gain value (by use of (84)) to the audio content signal generating a modified audio content signal; applying the ambient sound gain value (by use of (90)) to an ambient sound signal to generate a modified ambient sound signal. This reference however functions differently that the claimed invention and does not teach additionally in combination a display, a processor executing stored instructions on a memory, an earpiece including each of a first microphone, a second microphone, a speaker, a second memory and an ear processor along with as set forth in claim 1 to "mix the modified ambient sound signal with the modified audio content signal to generate a mixed signal". In Boersma, modifying the audio content signal (using (84) occurs after the audio content signal and

a modified ambient sound signal have been mixed by element (82). Also, in Boersma, it is not an earpiece processor that receives an audio content gain value and an ambient sound gain value, to form the modified signals and mix the modified signals. This combination of features as set forth are not an obvious variation of the teaching of Boersma. The limitations of claims 2-5, 18-19 depend upon those features of claim 1. Also, in addition to that discussed with respect to claim 1, Boersma teaches that the arrangement is used to detect an acute sound (such as sounds produced by police and sirens) as provided in applicant's claim 6. However, Boersma does not alone or obvious combination teach a device controlling ambient sound passthrough that includes the use of in combination first and second microphones, the signals produced by each being modified; generating an ambient sound signal from these modified signal(s), modifying a modified audio content signal if an acute sound is detected to generate a new modified audio content signal; generating a mixed signal from the ambient sound signal and the modified or new modified audio content signal which is then sent to the speaker as set forth in claim 6. The limitations of claims 7-17 and 20 depend upon those features of claim 6.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

5. This application is in condition for allowance except for the following formal matters:

### ***Specification***

The disclosure is objected to because of the following informalities: the specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The written disclosure must make reference to a “display” as originally set forth in claim 1.

Appropriate correction is required.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claim “display” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 25 USPQ 74, 453 O.G. 213, (Comm'r Pat. 1935).

A shortened statutory period for reply to this action is set to expire **TWO (2) MONTHS** from the mailing date of this letter. Extensions of time may be granted under 37 CFR 1.136 but in no case can any extension carry the date for reply to this Office action beyond the maximum period of SIX MONTHS set by statute (35 U.S.C. 133).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW SNIEZEK whose telephone number is (571)272-7563. The examiner can normally be reached Monday-Friday 7:00 AM-3:30 PM EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Lim can be reached on 571-270-1210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent->

Application/Control Number: 17/592,143  
Art Unit: 2688

Page 6

center for more information about Patent Center and

<https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For

additional questions, contact the Electronic Business Center (EBC) at 866-217-9197

(toll-free). If you would like assistance from a USPTO Customer Service

Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ANDREW L SNIEZEK/  
Primary Examiner, Art Unit 2688

/A.L.S/  
Primary Examiner, Art Unit 2688  
4/15/23

|                                          |                                       |  |                                                                |             |
|------------------------------------------|---------------------------------------|--|----------------------------------------------------------------|-------------|
| <b><i>Notice of References Cited</i></b> | Application/Control No.<br>17/592,143 |  | Applicant(s)/Patent Under<br>Reexamination<br>Goldstein et al. |             |
|                                          | Examiner<br>ANDREW SNIEZEK            |  | Art Unit<br>2688                                               | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name           | CPC Classification | US Classification |
|---|---|--------------------------------------------------|-----------------|----------------|--------------------|-------------------|
| * | A | US-7903826-B2                                    | 03-2011         | Boersma; Johan | H04R1/1041         | 381/74            |
|   | B |                                                  |                 |                |                    |                   |
|   | C |                                                  |                 |                |                    |                   |
|   | D |                                                  |                 |                |                    |                   |
|   | E |                                                  |                 |                |                    |                   |
|   | F |                                                  |                 |                |                    |                   |
|   | G |                                                  |                 |                |                    |                   |
|   | H |                                                  |                 |                |                    |                   |
|   | I |                                                  |                 |                |                    |                   |
|   | J |                                                  |                 |                |                    |                   |
|   | K |                                                  |                 |                |                    |                   |
|   | L |                                                  |                 |                |                    |                   |
|   | M |                                                  |                 |                |                    |                   |

**FOREIGN PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Country | Name | CPC Classification |
|---|---|--------------------------------------------------|-----------------|---------|------|--------------------|
|   | N |                                                  |                 |         |      |                    |
|   | O |                                                  |                 |         |      |                    |
|   | P |                                                  |                 |         |      |                    |
|   | Q |                                                  |                 |         |      |                    |
|   | R |                                                  |                 |         |      |                    |
|   | S |                                                  |                 |         |      |                    |
|   | T |                                                  |                 |         |      |                    |

**NON-PATENT DOCUMENTS**

| * |   | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|-------------------------------------------------------------------------------------------|
|   | U |                                                                                           |
|   | V |                                                                                           |
|   | W |                                                                                           |
|   | X |                                                                                           |

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office  
PTO-892 (Rev. 01-2001)

**Notice of References Cited**

Part of Paper No. 20230415

|                                                                                                                 |                                              |                                                                    |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|
| <b><i>Search Notes</i></b><br> | <b>Application/Control No.</b><br>17/592,143 | <b>Applicant(s)/Patent Under Reexamination</b><br>Goldstein et al. |
|                                                                                                                 | <b>Examiner</b><br>ANDREW SNIEZEK            | <b>Art Unit</b><br>2688                                            |

| CPC - Searched*                                                                           |            |          |
|-------------------------------------------------------------------------------------------|------------|----------|
| Symbol                                                                                    | Date       | Examiner |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 | 12/16/2022 | ALS      |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 | 04/15/2023 | ALS      |

| CPC Combination Sets - Searched* |      |          |
|----------------------------------|------|----------|
| Symbol                           | Date | Examiner |
|                                  |      |          |

| US Classification - Searched* |          |      |          |
|-------------------------------|----------|------|----------|
| Class                         | Subclass | Date | Examiner |
|                               |          |      |          |

\* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

|                                                       |  |
|-------------------------------------------------------|--|
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688 |  |
|-------------------------------------------------------|--|

|                                                                                                                 |                                              |                                                                    |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|
| <b><i>Search Notes</i></b><br> | <b>Application/Control No.</b><br>17/592,143 | <b>Applicant(s)/Patent Under Reexamination</b><br>Goldstein et al. |
|                                                                                                                 | <b>Examiner</b><br>ANDREW SNIEZEK            | <b>Art Unit</b><br>2688                                            |

| Search Notes                                                                                                                                |            |          |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| Search Notes                                                                                                                                | Date       | Examiner |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 (PE2E--text limited--see search history printout) | 12/16/2022 | ALS      |
| Reviewed prosecution history of parent applications                                                                                         | 12/16/2022 | ALS      |
| See assignee and inventor search history printout                                                                                           | 12/16/2022 | ALS      |
| See IP.COM search history printout                                                                                                          | 12/16/2022 | ALS      |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 (PE2E--text limited--see search history printout) | 04/15/2023 | ALS      |
| Reviewed prosecution history of parent applications                                                                                         | 04/15/2023 | ALS      |
| See assignee and inventor search history printout                                                                                           | 04/15/2023 | ALS      |

| Interference Search                      |                       |            |          |
|------------------------------------------|-----------------------|------------|----------|
| US Class/CPC Symbol                      | US Subclass/CPC Group | Date       | Examiner |
| See interference search history printout |                       | 04/15/2023 | ALS      |

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| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688 |  |
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Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     | 17592143               |
|                                                                                                     | Filing Date            | 2022-02-03             |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |
|                                                                                                     | Art Unit               | 2688                   |
|                                                                                                     | Examiner Name          | SNIEZEK, ANDREW L      |
|                                                                                                     | Attorney Docket Number | CONT-173218892         |

| U.S. PATENTS                                                                                               |         |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          | Remove                                                                   |                |
|------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------|-------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------|
| Examiner Initial*                                                                                          | Cite No | Patent Number                                                                                                                                                                                                                                                   | Kind Code <sup>1</sup>     | Issue Date             | Name of Patentee or Applicant of cited Document | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear |                                                                          |                |
|                                                                                                            | 1       |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          |                                                                          |                |
| If you wish to add additional U.S. Patent citation information please click the Add button.                |         |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          | Add                                                                      |                |
| U.S. PATENT APPLICATION PUBLICATIONS                                                                       |         |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          | Remove                                                                   |                |
| Examiner Initial*                                                                                          | Cite No | Publication Number                                                                                                                                                                                                                                              | Kind Code <sup>1</sup>     | Publication Date       | Name of Patentee or Applicant of cited Document | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear |                                                                          |                |
|                                                                                                            | 1       |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          |                                                                          |                |
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| FOREIGN PATENT DOCUMENTS                                                                                   |         |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          | Remove                                                                   |                |
| Examiner Initial*                                                                                          | Cite No | Foreign Document Number <sup>3</sup>                                                                                                                                                                                                                            | Country Code <sup>2i</sup> | Kind Code <sup>4</sup> | Publication Date                                | Name of Patentee or Applicant of cited Document                          | Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear | T <sup>5</sup> |
|                                                                                                            | 1       |                                                                                                                                                                                                                                                                 |                            |                        |                                                 |                                                                          |                                                                          |                |
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| Examiner Initials*                                                                                         | Cite No | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published. |                            |                        |                                                 |                                                                          |                                                                          | T <sup>5</sup> |

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.L.S./

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|-----------------------------------------------------------------------------------------------------|------------------------|------------------------|------------|
| <b>INFORMATION DISCLOSURE<br/>STATEMENT BY APPLICANT</b><br>( Not for submission under 37 CFR 1.99) | Application Number     |                        | 17592143   |
|                                                                                                     | Filing Date            |                        | 2022-02-03 |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |            |
|                                                                                                     | Art Unit               | 2688                   |            |
|                                                                                                     | Examiner Name          | SNIEZEK, ANDREW L      |            |
|                                                                                                     | Attorney Docket Number | CONT-173218892         |            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                    |  |                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 90/019169, Samsung Electronics Co., Ltd. and Samsung Electronics, America, Inc., REQUEST FOR EX PARTE<br>REEXAMINATION OF U.S. PATENT NO. 11,244,666 Date: 2/24/23 |  |                            |
| If you wish to add additional non-patent literature document citation information please click the Add button <input type="button" value="Add"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                    |  |                            |
| <b>EXAMINER SIGNATURE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                    |  |                            |
| Examiner Signature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | /ANDREW L SNIEZEK/ (04/14/2023)                                                                                                                                    |  | Date Considered 04/14/2023 |
| *EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                    |  |                            |
| <small> <sup>1</sup> See Kind Codes of USPTO Patent Documents at <a href="http://www.USPTO.GOV">www.USPTO.GOV</a> or MPEP 901.04. <sup>2</sup> Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language translation is attached.         </small> |                                                                                                                                                                    |  |                            |

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.L.S/

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|                                                                                                     | Art Unit               | 2688                   |
|                                                                                                     | Examiner Name          | SNIEZEK, ANDREW L      |
|                                                                                                     | Attorney Docket Number | CONT-173218892         |

### CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

### SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

|            |                 |                     |            |
|------------|-----------------|---------------------|------------|
| Signature  | /John P. Keady/ | Date (YYYY-MM-DD)   | 2023-03-22 |
| Name/Print | John P. Keady   | Registration Number | 56389      |

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
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4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

# PE2E SEARCH - Search History (Prior Art)

| Ref # | Hits | Search Query                                                                                                                                                                                                                                                                                                                                                                                                                   | DBs                                                                 | Default Operator | Plurals | British Equivalents | Time Stamp             |
|-------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------|---------|---------------------|------------------------|
| L1    | 5    | "11244666".pn. OR<br>"10810989".pn. OR<br>"10535334".pn. OR<br>"10134377".pn. OR<br>"8917894".pn.                                                                                                                                                                                                                                                                                                                              | (USPAT)                                                             | OR               | ON      | ON                  | 2022/12/16<br>07:39 AM |
| L2    | 0    | (Stanton near4<br>techiya).as. or (Steven<br>near4 Goldstein).in. or<br>(john near4 Beer).in. or<br>(Marc near4 Boillot).in.                                                                                                                                                                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L3    | 0    | ((((((((G10K11/17827))))))<br>))).cpc. or<br>((((((((G10K11/002))))))<br>)).cpc. or<br>((((((((H04R1/1016))))))<br>)).cpc. or<br>((((((((H04R1/1083))))))<br>)).cpc. or<br>((((((((H04R3/002))))))<br>)).cpc. or<br>((((((((H04R3/005))))))<br>)).cpc. or<br>((((((((H04R29/001))))))<br>)).cpc. or<br>((((((((H04R2225/41))))<br>))).cpc. or<br>((((((((H04R2460/05))))<br>))).cpc. or<br>((((((((H04R2499/11))))<br>))).cpc. | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L4    | 0    | L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L5    | 0    | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L6    | 0    | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L7    | 0    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |

|     |   |                                                                                                                                                                                                                         |                                                            |    |    |    |                     |
|-----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L8  | 0 | L7 and L4                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L9  | 0 | L7 not L8                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L10 | 0 | 8150044.pn.                                                                                                                                                                                                             | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L11 | 0 | ("8150044")[URPN]                                                                                                                                                                                                       | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L12 | 0 | ("8150044")[PN]                                                                                                                                                                                                         | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L13 | 0 | (20080037801   6728385   20070160243   20040037428   20070223717   6023517   20050111683   20080137873   5251263   4837832   5867581   20060262938   8059847   20050254665   20050105750   20040234089   6415034)! [PN] | (US-PGPUB; USPAT)                                          | OR | ON | ON | 2021/11/03 09:04 AM |
| L14 | 0 | L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))                                                                                      | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L15 | 0 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L16 | 0 | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L17 | 0 | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L18 | 0 | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |

|     |   |                                                                                                                                            |                                                                     |    |    |    |                        |
|-----|---|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L19 | 0 | ambulance)) same<br>(((turn adj3 down) or<br>mute) with audio or<br>misic)                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L20 | 0 | ((detect\$3 or sensing)<br>with siren) same (((turn<br>adj3 down) or mute)<br>with audio or misic)                                         | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L21 | 0 | L20 not L19                                                                                                                                | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L22 | 0 | (asm or (ambient adj3<br>microphone)) same<br>(ecm or (ear adj3 canal<br>adj3 microphone))                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L23 | 0 | L22 and L6                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L24 | 0 | L23 and ((gain or<br>multiplier) with (ambient<br>or surround or<br>environmental) with<br>sound)                                          | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L25 | 0 | 8577052.pn. or<br>5541359.pn. or<br>5774567.pn. or<br>7421084.pn. or<br>7903826.pn. or<br>7986802.pn. or<br>8199942.pn. or<br>10361673.pn. | (USPAT)                                                             | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L26 | 0 | 20050207597 or<br>20030035551 or<br>20080165988 or<br>20030151678 or<br>20060222185                                                        | (US-PGPUB)                                                          | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L27 | 0 | 5299030                                                                                                                                    | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L28 | 0 | 101401399                                                                                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |

|     |       |                                                                                                                                                                                                                                                                                    |                                                            |    |    |    |                     |
|-----|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L29 | 0     | 37603455.FMID.                                                                                                                                                                                                                                                                     | (USPAT; JPO; FPRS; US-PGPUB)                               | OR | ON | ON | 2021/11/03 09:04 AM |
| L30 | 0     | ecm or (ear adj4 canal adj4 microphone)                                                                                                                                                                                                                                            | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L31 | 0     | L30 and (L25 or L26 or L27 or L28)                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L32 | 0     | L30 and ((gain or multiplier or weight\$3 or factor) with (ambient or surround or environmental) with (acoustic or sound))                                                                                                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L33 | 0     | L32 and ((mix\$3 or combin\$3 or blend\$3) with (audio or music or source))                                                                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L34 | 0     | L33 and (earbud or headphone or headset or earpiece)                                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L35 | 0     | 20080165988                                                                                                                                                                                                                                                                        | (US-PGPUB)                                                 | OR | ON | ON | 2021/11/03 09:04 AM |
| L36 | 0     | L35 and (earbud or headphone or headset or earpiece)                                                                                                                                                                                                                               | (US-PGPUB)                                                 | OR | ON | ON | 2021/11/03 09:04 AM |
| L37 | 5     | "11244666".pn. OR "10810989".pn. OR "10535334".pn. OR "10134377".pn. OR "8917894".pn.                                                                                                                                                                                              | (USPAT)                                                    | OR | ON | ON | 2022/12/16 07:41 AM |
| L38 | 1262  | (Stanton near4 techiya).as. or (Steven near4 Goldstein).in. or (john near4 Beer).in. or (Marc near4 Boillot).in.                                                                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L39 | 94232 | (((((((((G10K11/17827)))))))).cpc. or (((((((G10K11/002)))))))).cpc. or (((((((H04R1/1016)))))))).cpc. or (((((((H04R1/1083)))))))).cpc. or (((((((H04R3/002)))))))).cpc. or (((((((H04R3/005)))))))).cpc. or (((((((H04R29/001)))))))).cpc. or (((((((H04R2225/41)))))))).cpc. or | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |

|     |        |                                                                                                                                                                                                                                                                      |                                                                     |    |    |    |                        |
|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L40 | 531846 | (((H04R2460/05))))<br>)).cpc. or<br>(((H04R2499/11))))<br>)).cpc.<br>L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                             | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L41 | 10     | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L42 | 1169   | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L43 | 373    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L44 | 81     | L7 and L4                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L45 | 292    | L7 not L8                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L46 | 1      | 8150044.pn.                                                                                                                                                                                                                                                          | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L47 | 39     | ("8150044")[URPN]                                                                                                                                                                                                                                                    | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L48 | 1      | ("8150044")[PN]                                                                                                                                                                                                                                                      | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L49 | 17     | (20080037801  <br>6728385  <br>20070160243  <br>20040037428  <br>20070223717  <br>6023517  <br>20050111683  <br>20080137873  <br>5251263   4837832  <br>5867581  <br>20060262938  <br>8059847  <br>20050254665  <br>20050105750  <br>20040234089  <br>6415034)! [PN] | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2022/12/16<br>07:41 AM |

|     |     |                                                                                                                                                                           |                                                            |    |    |    |                     |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L50 | 247 | L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))                                        | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L51 | 840 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                     | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L52 | 46  | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L53 | 2   | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L54 | 3   | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic) | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L55 | 20  | ((detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L56 | 67  | ((detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic)                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L57 | 47  | L20 not L19                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L58 | 609 | (asm or (ambient adj3 microphone)) same (ecm or (ear adj3 canal adj3 microphone))                                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L59 | 148 | L22 and L6                                                                                                                                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L60 | 56  | L23 and ((gain or multiplier) with (ambient                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO;                         | OR | ON | ON | 2022/12/16 07:41 AM |

|     |       |                                                                                                                                                                                         |                                                                     |    |    |    |                        |
|-----|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L61 | 8     | or surround or environmental) with sound)<br>8577052.pn. or<br>5541359.pn. or<br>5774567.pn. or<br>7421084.pn. or<br>7903826.pn. or<br>7986802.pn. or<br>8199942.pn. or<br>10361673.pn. | DERWENT; IBM_TDB;<br>FPRS)<br>(USPAT)                               | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L62 | 5     | 20050207597 or<br>20030035551 or<br>20080165988 or<br>20030151678 or<br>20060222185                                                                                                     | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L63 | 13    | 5299030                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L64 | 21    | 101401399                                                                                                                                                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L65 | 9     | 37603455.FMID.                                                                                                                                                                          | (USPAT; JPO; FPRS;<br>US-PGPUB)                                     | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L66 | 86148 | ecm or (ear adj4 canal<br>adj4 microphone)                                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L67 | 4     | L30 and (L25 or L26 or<br>L27 or L28)                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L68 | 316   | L30 and ((gain or<br>multiplier or weight\$3 or<br>factor) with (ambient or<br>surround or<br>environmental) with<br>(acoustic or sound))                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L69 | 139   | L32 and ((mix\$3 or<br>conbin\$3 or blend\$3)<br>with (audio or music or<br>source))                                                                                                    | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L70 | 139   | L33 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L71 | 1     | 20080165988                                                                                                                                                                             | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L72 | 1     | L35 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                              | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L73 | 3349  | ("20100296668" "60213                                                                                                                                                                   | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2022/12/16             |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |          |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|----------|
|  |  | 25" "6163508" "680464<br>3" "8611560" "2003015<br>2359" "20040109579" "<br>20050078838" "200600<br>83390" "20060188105" "<br>"20060264176" "20140<br>023203" "20150215701<br>" "5267321" "6021207" "<br>6606598" "6639987" "7<br>072482" "8160261" "87<br>98278" "20050058313" "<br>"20050288057" "20070<br>043563" "20090010456<br>" "20090024234" "3876<br>843" "6298323" "67482<br>38" "7562020" "849320<br>4" "9037458" "2011011<br>6643" "20140163976" "<br>5933510" "7464029" "7<br>477756" "8254591" "20<br>070291953" "20080165<br>988" "5208867" "65675<br>24" "6804638" "743029<br>9" "7433714" "8750295"<br> "20040264938" "20060<br>188075" "20080037801<br>" "6728385" "6754359" "<br>8917894" "9196247" "2<br>0010046304" "2004019<br>6992" "20060092043" "<br>20070189544" "201401<br>22092" "5903868" "913<br>5797" "20040086138" "<br>20060140425" "200901<br>22996" "6005525" "611<br>8877" "7903825" "8983<br>081" "20020106091" "2<br>0040042103" "2004020<br>3351" "20060173563" "<br>20060195322" "200700<br>86600" "20090076821" "<br>"6163338" "6661901" "9<br>123343" "20070036377<br>" "20080137873" "5923<br>624" "6415034" "74507<br>30" "8014553" "816027<br>3" "9491542" "2004012<br>5965" "20040190737" "<br>20050123146" "405474<br>9" "6226389" "7107109"<br> "7756285" "200301653<br>19" "20060204014" "20<br>080145032" "4088849" "<br>"7778434" "8625818" "8<br>718305" "RE38351" "20<br>100061564" "20110096<br>939" "20110264447" "4<br>947440" "7158933" "79 |  |  |  |  | 08:41 AM |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|----------|

|     |        |                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                     |    |    |    |                     |
|-----|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---------------------|
|     |        | 20557" "20020098878" "20050028212" "6359993" "7983907" "8140325" "8401200" "8045840" "20020118798" "20030161097" "20030165246" "20040109668" "20060067551" "20060083395" "20090286515" "20110293103" "20160104452" "6400652" "20020076057" "20020165719" "20050068171" "20060167687" "20070003090" "20070255435" "5327506" "5524056" "7039585" "7050592" "7209569" "7574917" "8086093" "8218784").PN |                                                                                                                                                                                                                                                                                                     |    |    |    |                     |
| L74 | 329546 | mix\$3 near4 (value OR ratio)                                                                                                                                                                                                                                                                                                                                                                        | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                   | OR | ON | ON | 2022/12/16 08:43 AM |
| L75 | 44     | L74 AND I73                                                                                                                                                                                                                                                                                                                                                                                          | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                   | OR | ON | ON | 2022/12/16 08:43 AM |
| L76 | 3      | "6647368".pn. OR "5251263".pn. OR "7903826".pn.                                                                                                                                                                                                                                                                                                                                                      | (USPAT)                                                                                                                                                                                                                                                                                             | OR | ON | ON | 2023/04/14 05:43 AM |
| L77 | 3      | "20010046304" OR "200400474861" OR "20060153394"                                                                                                                                                                                                                                                                                                                                                     | (US-PGPUB)                                                                                                                                                                                                                                                                                          | OR | ON | ON | 2023/04/14 05:52 AM |
| L78 | 121    | "1640972" OR "1519625"                                                                                                                                                                                                                                                                                                                                                                               | (USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/04/14 05:57 AM |
| L79 | 8      | (L76 OR L77) AND gain AND (mix\$3 OR combin\$5)                                                                                                                                                                                                                                                                                                                                                      | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                   | OR | ON | ON | 2023/04/14 06:08 AM |
| L80 | 183    | (earbud OR headphone OR headset OR earpiece) SAME ((sens\$3 OR detect\$3) WITH ((acute adj3 sound) OR (emergency adj3 (vehicle OR warning OR police OR siren OR ambulance))))                                                                                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,                                                                                                       | OR | ON | ON | 2023/04/14 09:11 AM |

|     |      |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |    |    |                     |
|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---------------------|
| L81 | 1724 | ((microphone OR asm OR ASM) WITH (ambient OR environment OR external\$3)) SAME ((microphone OR ecm OR ECM) WITH ear WITH (adjacent OR inside OR close) WITH canal) | MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)<br>(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/04/14 09:16 AM |
| L82 | 11   | L80 AND I81                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)                                                                                                                           | OR | ON | ON | 2023/04/14 09:16 AM |
| L83 | 1030 | (earbud OR headphone OR headset OR earpiece) SAME ((sens\$3 OR detect\$3) WITH (sound WITH (acute OR emergency OR warning OR police OR siren OR ambulance))))      | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)                                                                                                                           | OR | ON | ON | 2023/04/14 09:22 AM |
| L84 | 20   | L81 AND I83                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; FIT (AU, AP,                                                                                                                                                                                                                                                                                                                                                                                                          | OR | ON | ON | 2023/04/14 09:22 AM |

|     |        |                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |    |    |                     |
|-----|--------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---------------------|
| L85 | 9      | L84 NOT I82                                                                                                                 | AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)<br>(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/04/14 09:22 AM |
| L86 | 1      | "7903826".pn.                                                                                                               | (USPAT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | OR | ON | ON | 2023/04/14 09:25 AM |
| L87 | 44     | ("5276740"   "5448637"   "7206429"   "20020037746"   "20030118197").pn. OR ("7903826").urpn. AND (PGPB   USPT   USOC).dbnm. | (US-PGPUB; USPAT; USOCR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OR | ON | ON | 2023/04/14 09:25 AM |
| L88 | 452    | (mix\$3 OR combin\$3) WITH ((ambient OR environment\$3) near4 sound) WITH (audio near6 (record\$3 OR playback))             | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)                                                                                                                                                                                                                                                                                   | OR | ON | ON | 2023/04/14 09:50 AM |
| L89 | 236958 | (detect\$3 OR sens\$3)                                                                                                      | (US-PGPUB; USPAT;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OR | ON | ON | 2023/04/14          |

|     |         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                   |    |    |    |                        |
|-----|---------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|------------------------|
|     |         | WITH (acute OR siren<br>OR emergency OR<br>police OR ambulance)                   | USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB)                      |    |    |    | 09:52 AM               |
| L90 | 2845869 | (modify\$3 OR adjust\$4<br>OR chang\$3 OR<br>vary\$3) WITH (gain OR<br>amplitude) | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/04/14<br>09:54 AM |
| L91 | 0       | L90 AND L89 AND I88                                                               | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/04/14<br>09:54 AM |
| L92 | 2       | L88 AND I89                                                                       | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,                                                                                                                      | OR | ON | ON | 2023/04/14<br>09:55 AM |

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|--|--|--|-------------------------------------------------------------------------------------------------------------------|--|--|--|--|
|  |  |  | NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) |  |  |  |  |
|--|--|--|-------------------------------------------------------------------------------------------------------------------|--|--|--|--|

## PE2E SEARCH - Search History (Interference)

| Ref # | Hits | Search Query                                                                                                                       | DBs               | Default Operator | Plurals | British Equivalents | Time Stamp          |
|-------|------|------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------|---------|---------------------|---------------------|
| N1    | 0    | (earphone and microphone and ambient and (ear adj3 canal) and speaker and memory and processor and gain and mixing and audio).clm. | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2021/11/03 09:04 AM |
| N37   | 24   | (earpiece AND microphone AND audio AND ambient AND gain AND mix\$3).clm.                                                           | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2023/04/14 09:57 AM |
| N38   | 3    | (microphone AND audio AND canal AND ambient AND acute AND modif\$3 AND mix\$3).clm.                                                | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2023/04/14 10:04 AM |

| Electronic Acknowledgement Receipt          |                                                              |
|---------------------------------------------|--------------------------------------------------------------|
| <b>EFS ID:</b>                              | 47878199                                                     |
| <b>Application Number:</b>                  | 17592143                                                     |
| <b>International Application Number:</b>    |                                                              |
| <b>Confirmation Number:</b>                 | 3471                                                         |
| <b>Title of Invention:</b>                  | METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION |
| <b>First Named Inventor/Applicant Name:</b> | Steven Wayne Goldstein                                       |
| <b>Customer Number:</b>                     | 150139                                                       |
| <b>Filer:</b>                               | John Patrick Keady                                           |
| <b>Filer Authorized By:</b>                 |                                                              |
| <b>Attorney Docket Number:</b>              | 11472-27-5_CONT-17321892                                     |
| <b>Receipt Date:</b>                        | 20-APR-2023                                                  |
| <b>Filing Date:</b>                         | 03-FEB-2022                                                  |
| <b>Time Stamp:</b>                          | 17:38:40                                                     |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                  |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description                           | File Name             | File Size(Bytes)/ Message Digest             | Multi Part /.zip | Pages (if appl.) |
|-----------------|------------------------------------------------|-----------------------|----------------------------------------------|------------------|------------------|
| 1               | Amendment after Notice of Allowance (Rule 312) | 17592143_RNOA_JPK.pdf | 189978                                       | no               | 8                |
|                 |                                                |                       | 82d4cb8ba3f6ee50190abe37fb230b253ffe<br>bbb6 |                  |                  |

### Warnings:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 189978 |
| <p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> <b>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> <b>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> <b>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</b></p> |        |

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO. : 17/592,143 CONFIRMATION NO. 3471  
APPLICATION OF : Steven Wayne Goldstein  
DATE FILED : 3 Feb. 2022  
EXAMINER : SNIEZEK, ANDREW L  
TC/A.U. : 2688  
DOCKET : CONT-17321892  
TITLE : METHOD AND DEVICE FOR ACUTE SOUND  
DETECTION AND REPRODUCTION

**312 Amendment in Response to Exparte Quayle Action**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Date: April 20, 2023

Sir:

These remarks are filed in response to the Ex parte Quayle Office Action dated 20 Apr. 2023. Please amend the above-identified patent application as follows:

- **Amendments to the Claims** begin on page 2 of this paper; and
- **Remarks/Arguments** begin on page 5 of this paper.

### **AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions, and listings, of claims in the application.

#### **Listing of Claims:**

1.(currently amended) A device that can control ambient passthrough in an earpiece comprising:

~~a display;~~

a first memory that stores instructions; and

a processor that executes the instructions to perform operations, the operations comprising:

communicatively connecting to an earpiece, wherein the earpiece includes a first microphone, a second microphone, a speaker, a second memory and an earpiece processor;

sending an audio content gain value and an ambient sound gain value to the earpiece; and

sending an audio content signal to the earpiece, wherein the earpiece processor is configured to:

apply the audio content gain value to the audio content signal to generate a modified audio content signal;

apply the ambient sound gain value to an ambient sound signal to generate a modified ambient sound signal; and

mixing the modified ambient sound signal with the modified audio content signal to generate a mixed signal.

2.(currently amended) The device according to claim 1, wherein the earpiece processor is configured to calculate a noise level based upon a first microphone signal from the first microphone and vary the mixing ~~ratio~~ based upon the noise level.

3.(previously presented) The device according to claim 1, wherein the earpiece processor is configured to generate the ambient sound signal from a first microphone signal from the first microphone.

4.(previously presented) The device according to claim 1 further including a user interface.

5.(previously presented) The device according to claim 1, wherein the earpiece processor is configured to apply an ambient gain to a first microphone signal from the first microphone to generate an ambient sound signal.

6.(currently amended) A device that can control ambient sound passthrough comprising:

- a first microphone configured to measure a first acoustic environment to generate a first microphone signal;

- a second microphone configured to be positioned closer to a user's ear canal than the first microphone when the device is worn, where the second microphone is configured to generate a second microphone signal;

- a speaker;

- a memory that stores instructions; and

- a processor ~~configured to~~ that executes the instructions to perform operations, the operations comprising:

- receiving an audio content signal;

- modifying the audio content signal to generate a modified audio content signal;

- modifying the first microphone signal to generate a modified first microphone signal;

- modifying the second microphone signal to generate a modified second

microphone signal;

generating an ambient sound signal from at least one of the modified first microphone signal, the modified second microphone signal or a combination ~~thereof~~ of both;

detecting an acute sound by analyzing at least one of the modified first microphone signal, the modified second microphone signal or a combination thereof ~~both~~;

modifying the modified audio content signal if an acute sound is detected to generate a new modified audio content signal;

generating a mixed signal by mixing the ambient sound signal with the modified audio content signal or the new modified audio content signal; and

sending the mixed signal to the speaker.

7.(currently amended) The device according to claim 6, wherein the operations further comprise:

determining if the acute sound is a user's voice by analyzing the temporal and spectral characteristics of at least one of the modified first microphone signal, the modified second microphone signal or a combination thereof.

8.(previously presented) The device according to claim 7, wherein the operations further comprise:

generating a noise signal from at least one of the modified first microphone signal, the modified second microphone signal, or both.

generating a noise reduction signal.

9.(previously presented) The device according to claim 8, wherein the operations further comprise:

mixing the noise reduction signal with the mixed signal to generate a new mixed signal, and sending the new mixed signal to the speaker instead of the mixed signal.

10.(previously presented) The device according to claim 9, wherein the operations further comprise:

    sending a modified ambient signal to the speaker instead of the new mixed signal if the user's voice is detected.

11.(previously presented) The device according to claim 7, wherein the operations further comprise:

    sending a modified ambient signal to the speaker instead of the mixed signal if the user's voice is detected.

12.(previously presented) The device according to claim 7, wherein the operations further comprise:

    detecting whether the acute sound is at least one of a warning sound, siren, voice, specific noise type, or a combination, by analyzing the spectrum of at least one of the modified first microphone signal, the modified second microphone signal, the modified ambient sound signal, or a combination.

13.(previously presented) The device according to claim 12, wherein the operations further comprise:

    decreasing a volume of the modified audio content signal when a warning or siren is detected.

14.(previously presented) The device according to claim 6, wherein the operations further comprise:

decreasing a volume of the modified audio content signal when a user's voice is detected.

15.(previously presented) The device according to claim 12, where the operations further comprise:

    sending a notification signal to the speaker if the acute sound is a warning sound or siren.

16.(previously presented) The device according to claim 15, wherein the warning sound is at least one of a bell, an emergency vehicle, the sound of a security system or a combination thereof.

17.(previously presented) The device according to claim 12, wherein if an alarm is detected it is at least one of a police siren, an ambulance siren, a car honking or a combination thereof.

18.(previously presented) The device according to claim 1, wherein the device is a portable communication device.

19.(previously presented) The device according to claim 18, where the device portable communication device is at least one of a phone, a watch, a tablet, earpiece, a laptop computer or a combination thereof.

20.(previously presented) The device according to claim 6, wherein the acute sound is a voice.

### **REMARKS**

The foregoing amendments and the following remarks are made in response to the Exparte quayle Action dated 20 Apr 2022. At the time of the Office Action, the Examiner noted that claims 1-20 were pending. The Examiner allowed claims 1-20 but objected to the term “display” in claim 1. Claim 1 has been amended. In view of the arguments set forth below, claims 1-20 are allowable, and the Examiner is respectfully requested to withdraw the objection and issue a Notice of Allowance on the currently amended claims.

#### **I. Specification and Drawing**

The Examiner has objected to the specification and drawings as not implicitly showing a “display.” The Applicant in the interest of expedited prosecution has amended claim 1 to remove “display” since the display is not referred to directly in any dependent claim. However, Applicant points out that the device can be a phone, tablet, watch or any other communication device, which inherently can include a display, as would be acknowledged by one of ordinary skill in the art. Hence the removal of the term “display” is not an admission that such a term is not inherently discussed within the specification.

For at least these reasons, withdrawal of the specification and drawing objection is respectfully requested.

#### **II. Conclusion**

Should the Examiner believe that anything further is necessary, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

**TECHIYA LLC**

Date: April 20, 2023

---

/John P. Keady/

John P. Keady  
Ph.D. (Physics), Ph.D. (Comp. Sci.)  
CTO and Assistant General Counsel of IP  
Reg. No. 56,389  
571-606-1291



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
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## NOTICE OF ALLOWANCE AND FEE(S) DUE

150139 7590 05/23/2023  
Akerman LLP  
777 South Flagler Drive  
Suite 1100 West Tower  
West Palm Beach, FL 33401

EXAMINER

SNIEZEK, ANDREW L

ART UNIT

PAPER NUMBER

2688

DATE MAILED: 05/23/2023

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|-----------------|-------------|------------------------|--------------------------|------------------|
| 17/592,143      | 02/03/2022  | Steven Wayne Goldstein | 11472-27-5_CONT-17321892 | 3471             |

TITLE OF INVENTION: METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | SMALL         | \$480         | \$0.00              | \$0.00               | \$480            | 08/23/2023 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at [www.uspto.gov/PatentMaintenanceFees](http://www.uspto.gov/PatentMaintenanceFees).**

## PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

150139 7590 05/23/2023  
Akerman LLP  
777 South Flagler Drive  
Suite 1100 West Tower  
West Palm Beach, FL 33401

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

|                         |
|-------------------------|
| (Typed or printed name) |
| (Signature)             |
| (Date)                  |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|-----------------|-------------|------------------------|--------------------------|------------------|
| 17/592,143      | 02/03/2022  | Steven Wayne Goldstein | 11472-27-5_CONT-17321892 | 3471             |

TITLE OF INVENTION: METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | SMALL         | \$480         | \$0.00              | \$0.00               | \$480            | 08/23/2023 |

| EXAMINER          | ART UNIT | CLASS-SUBCLASS |
|-------------------|----------|----------------|
| SNIEZEK, ANDREW L | 2688     | 381-056000     |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via Patent Center or EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. \_\_\_\_\_

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_



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| APPLICATION NO.           | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|---------------------------|-------------|------------------------|--------------------------|------------------|
| 17/592,143                | 02/03/2022  | Steven Wayne Goldstein | 11472-27-5_CONT-17321892 | 3471             |
| 150139                    | 7590        | 05/23/2023             | EXAMINER                 |                  |
| Akerman LLP               |             |                        | SNIEZEK, ANDREW L        |                  |
| 777 South Flagler Drive   |             |                        | ART UNIT                 |                  |
| Suite 1100 West Tower     |             |                        | PAPER NUMBER             |                  |
| West Palm Beach, FL 33401 |             |                        | 2688                     |                  |
| DATE MAILED: 05/23/2023   |             |                        |                          |                  |

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

## OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.** Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

### Privacy Act Statement

**The Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

|                               |                                      |                                         |                                |
|-------------------------------|--------------------------------------|-----------------------------------------|--------------------------------|
| <b>Notice of Allowability</b> | <b>Application No.</b><br>17/592,143 | <b>Applicant(s)</b><br>Goldstein et al. |                                |
|                               | <b>Examiner</b><br>ANDREW SNIEZEK    | <b>Art Unit</b><br>2688                 | <b>AIA (FITF) Status</b><br>No |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 4/20/23.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
**Certified copies:**  
a) ☐ All      b) ☐ Some\*      c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).  
\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

|                                                                                                                   |                                                                           |
|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)                                                  | 5. <input checked="" type="checkbox"/> Examiner's Amendment/Comment       |
| 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____.          | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material _____. | 7. <input type="checkbox"/> Other _____.                                  |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date. _____.                           |                                                                           |

|                                                       |  |
|-------------------------------------------------------|--|
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688 |  |
|-------------------------------------------------------|--|

***Notice of Pre-AIA or AIA Status***

1. The present application is being examined under the pre-AIA first to invent provisions.

***Allowable Subject Matter***

2. Claims 1-5, 6-13, 14, 15-17, 18-19 and 20 are allowed.

**Examiner's Comments**

3. Claims 1-5, 6-13, 14, 15-17, 18-19 and 20 have been renumbered as claims 1-5, 8-15, 19, 16-18, 6-7 and 20 respectively.

***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW SNIEZEK whose telephone number is (571)272-7563. The examiner can normally be reached Monday-Friday 7:00 AM-3:30 PM EST.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Lim can be reached on 571-270-1210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center,

Application/Control Number: 17/592,143  
Art Unit: 2688

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visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ANDREW L SNIEZEK/  
Primary Examiner, Art Unit

2688

/A.L.S/  
Primary Examiner, Art Unit 2688  
5/11/23

|                                                                                                                  |                                              |                                                                    |
|------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>17/592,143 | <b>Applicant(s)/Patent Under Reexamination</b><br>Goldstein et al. |
|                                                                                                                  | <b>Examiner</b><br>ANDREW SNIEZEK            | <b>Art Unit</b><br>2688                                            |

| CPC    |   |      |   |       |      |            |
|--------|---|------|---|-------|------|------------|
| Symbol |   |      |   |       | Type | Version    |
| G10K   | / | 11   | / | 17827 | F    | 2018-01-01 |
| H04R   | / | 3    | / | 005   | I    | 2013-01-01 |
| H04R   | / | 1    | / | 1016  | I    | 2013-01-01 |
| H04R   | / | 1    | / | 1083  | I    | 2013-01-01 |
| H04R   | / | 3    | / | 002   | I    | 2013-01-01 |
| G10K   | / | 11   | / | 002   | I    | 2013-01-01 |
| H04R   | / | 29   | / | 001   | I    | 2013-01-01 |
| H04R   | / | 2225 | / | 41    | A    | 2013-01-01 |
| H04R   | / | 2460 | / | 05    | A    | 2013-01-01 |
| H04R   | / | 2499 | / | 11    | A    | 2013-01-01 |

| CPC Combination Sets |      |     |         |         |
|----------------------|------|-----|---------|---------|
| Symbol               | Type | Set | Ranking | Version |
| /                    |      |     |         |         |

|                                                                                    |  |                                    |                        |
|------------------------------------------------------------------------------------|--|------------------------------------|------------------------|
| NONE<br>(Assistant Examiner) (Date)                                                |  | <b>Total Claims Allowed:</b><br>20 |                        |
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688<br>(Primary Examiner) (Date) |  | O.G. Print Claim(s)<br>1           | O.G. Print Figure<br>1 |

U.S. Patent and Trademark Office

Part of Paper No.: 20230511

|                                                                                                                  |                                              |                                                                    |  |
|------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|--|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>17/592,143 | <b>Applicant(s)/Patent Under Reexamination</b><br>Goldstein et al. |  |
|                                                                                                                  | <b>Examiner</b><br>ANDREW SNIEZEK            | <b>Art Unit</b><br>2688                                            |  |

| INTERNATIONAL CLASSIFICATION |   |    |       |
|------------------------------|---|----|-------|
| CLAIMED                      |   |    |       |
| G10K11/178                   | / | 11 | / 178 |
| H04R3/00                     | / | 3  | / 00  |
| H04R1/10                     | / | 1  | / 10  |
| G10K11/00                    | / | 11 | / 00  |
| H04R29/00                    | / | 29 | / 00  |
| NON-CLAIMED                  |   |    |       |
|                              | / |    | /     |

| US ORIGINAL CLASSIFICATION |          |
|----------------------------|----------|
| CLASS                      | SUBCLASS |
| 381                        | 56       |

| CROSS REFERENCES(S) |                                   |  |  |  |  |  |
|---------------------|-----------------------------------|--|--|--|--|--|
| CLASS               | SUBCLASS (ONE SUBCLASS PER BLOCK) |  |  |  |  |  |
|                     |                                   |  |  |  |  |  |

|                                                       |             |                              |                   |
|-------------------------------------------------------|-------------|------------------------------|-------------------|
| NONE                                                  |             | <b>Total Claims Allowed:</b> |                   |
| (Assistant Examiner)                                  | (Date)      | 20                           |                   |
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688 | 11 May 2023 | O.G. Print Claim(s)          | O.G. Print Figure |
| (Primary Examiner)                                    | (Date)      | 1                            | 1                 |

U.S. Patent and Trademark Office

Part of Paper No.: 20230511

|                                                                                                                  |                                              |                                                                    |
|------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|
| <b>Issue Classification</b><br> | <b>Application/Control No.</b><br>17/592,143 | <b>Applicant(s)/Patent Under Reexamination</b><br>Goldstein et al. |
|                                                                                                                  | <b>Examiner</b><br>ANDREW SNIEZEK            | <b>Art Unit</b><br>2688                                            |

|                                                                                                                                                                                   |                 |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|-----------------|--------------|-----------------|--------------|-----------------|--------------|-----------------|--------------|-----------------|--------------|-----------------|--------------|-----------------|
| <input type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47 |                 |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
| <b>CLAIMS</b>                                                                                                                                                                     |                 |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
| <b>Final</b>                                                                                                                                                                      | <b>Original</b> | <b>Final</b> | <b>Original</b> | <b>Final</b> | <b>Original</b> | <b>Final</b> | <b>Original</b> | <b>Final</b> | <b>Original</b> | <b>Final</b> | <b>Original</b> | <b>Final</b> | <b>Original</b> | <b>Final</b> | <b>Original</b> |
| 1                                                                                                                                                                                 | 1               | 12           | 10              | 7            | 19              |              |                 |              |                 |              |                 |              |                 |              |                 |
| 2                                                                                                                                                                                 | 2               | 13           | 11              | 20           | 20              |              |                 |              |                 |              |                 |              |                 |              |                 |
| 3                                                                                                                                                                                 | 3               | 14           | 12              |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
| 4                                                                                                                                                                                 | 4               | 15           | 13              |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
| 5                                                                                                                                                                                 | 5               | 19           | 14              |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
| 8                                                                                                                                                                                 | 6               | 16           | 15              |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
| 9                                                                                                                                                                                 | 7               | 17           | 16              |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
| 10                                                                                                                                                                                | 8               | 18           | 17              |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |
| 11                                                                                                                                                                                | 9               | 6            | 18              |              |                 |              |                 |              |                 |              |                 |              |                 |              |                 |

|                                                                                                      |  |                                    |                        |
|------------------------------------------------------------------------------------------------------|--|------------------------------------|------------------------|
| NONE<br><br>(Assistant Examiner) _____ (Date) _____                                                  |  | <b>Total Claims Allowed:</b><br>20 |                        |
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688<br>(Primary Examiner) _____ (Date) 11 May 2023 |  | O.G. Print Claim(s)<br>1           | O.G. Print Figure<br>1 |

U.S. Patent and Trademark Office

Part of Paper No.: 20230511

|                                                                                                                 |                                              |                                                                    |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|
| <b><i>Search Notes</i></b><br> | <b>Application/Control No.</b><br>17/592,143 | <b>Applicant(s)/Patent Under Reexamination</b><br>Goldstein et al. |
|                                                                                                                 | <b>Examiner</b><br>ANDREW SNIEZEK            | <b>Art Unit</b><br>2688                                            |

| CPC - Searched*                                                                           |            |          |
|-------------------------------------------------------------------------------------------|------------|----------|
| Symbol                                                                                    | Date       | Examiner |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 | 12/16/2022 | ALS      |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 | 04/15/2023 | ALS      |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 | 05/11/2023 | ALS      |

| CPC Combination Sets - Searched* |      |          |
|----------------------------------|------|----------|
| Symbol                           | Date | Examiner |
|                                  |      |          |

| US Classification - Searched* |          |      |          |
|-------------------------------|----------|------|----------|
| Class                         | Subclass | Date | Examiner |
|                               |          |      |          |

\* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

|                                                       |  |
|-------------------------------------------------------|--|
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688 |  |
|-------------------------------------------------------|--|

|                                                                                                                 |                                              |                                                                    |
|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------|
| <b><i>Search Notes</i></b><br> | <b>Application/Control No.</b><br>17/592,143 | <b>Applicant(s)/Patent Under Reexamination</b><br>Goldstein et al. |
|                                                                                                                 | <b>Examiner</b><br>ANDREW SNIEZEK            | <b>Art Unit</b><br>2688                                            |

| Search Notes                                                                                                                                |            |          |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
| Search Notes                                                                                                                                | Date       | Examiner |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 (PE2E--text limited--see search history printout) | 12/16/2022 | ALS      |
| Reviewed prosecution history of parent applications                                                                                         | 12/16/2022 | ALS      |
| See assignee and inventor search history printout                                                                                           | 12/16/2022 | ALS      |
| See IP.COM search history printout                                                                                                          | 12/16/2022 | ALS      |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 (PE2E--text limited--see search history printout) | 04/15/2023 | ALS      |
| Reviewed prosecution history of parent applications                                                                                         | 04/15/2023 | ALS      |
| See assignee and inventor search history printout                                                                                           | 04/15/2023 | ALS      |
| G10K11/17827, 11/002; H04R1/1016, 1/1083, 3/002, 3/005, 29/001, 2225/41, 2460/05, 2499/11 (PE2E--text limited--see search history printout) | 05/11/2023 | ALS      |
| Reviewed prosecution history of parent applications                                                                                         | 05/11/2023 | ALS      |
| See assignee and inventor search history printout                                                                                           | 05/11/2023 | ALS      |

| Interference Search                      |                       |            |          |
|------------------------------------------|-----------------------|------------|----------|
| US Class/CPC Symbol                      | US Subclass/CPC Group | Date       | Examiner |
| See interference search history printout |                       | 04/15/2023 | ALS      |
| See interference search history printout |                       | 05/11/2023 | ALS      |

|                                                       |  |
|-------------------------------------------------------|--|
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688 |  |
|-------------------------------------------------------|--|

## PE2E SEARCH - Search History (Prior Art)

| Ref # | Hits | Search Query                                                                                                                                                                                                                                                                                                                                                                                                                   | DBs                                                                 | Default Operator | Plurals | British Equivalents | Time Stamp             |
|-------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------|---------|---------------------|------------------------|
| L1    | 5    | "11244666".pn. OR<br>"10810989".pn. OR<br>"10535334".pn. OR<br>"10134377".pn. OR<br>"8917894".pn.                                                                                                                                                                                                                                                                                                                              | (USPAT)                                                             | OR               | ON      | ON                  | 2022/12/16<br>07:39 AM |
| L2    | 0    | (Stanton near4<br>techiya).as. or (Steven<br>near4 Goldstein).in. or<br>(john near4 Beer).in. or<br>(Marc near4 Boillot).in.                                                                                                                                                                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L3    | 0    | ((((((((G10K11/17827))))))<br>))).cpc. or<br>((((((((G10K11/002))))))<br>)).cpc. or<br>((((((((H04R1/1016))))))<br>)).cpc. or<br>((((((((H04R1/1083))))))<br>)).cpc. or<br>((((((((H04R3/002))))))<br>)).cpc. or<br>((((((((H04R3/005))))))<br>)).cpc. or<br>((((((((H04R29/001))))))<br>)).cpc. or<br>((((((((H04R2225/41))))<br>))).cpc. or<br>((((((((H04R2460/05))))<br>))).cpc. or<br>((((((((H04R2499/11))))<br>))).cpc. | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L4    | 0    | L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L5    | 0    | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L6    | 0    | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |
| L7    | 0    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR               | ON      | ON                  | 2021/11/03<br>09:04 AM |

|     |   |                                                                                                                                                                                                                         |                                                            |    |    |    |                     |
|-----|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L8  | 0 | L7 and L4                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L9  | 0 | L7 not L8                                                                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L10 | 0 | 8150044.pn.                                                                                                                                                                                                             | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L11 | 0 | ("8150044")[URPN]                                                                                                                                                                                                       | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L12 | 0 | ("8150044")[PN]                                                                                                                                                                                                         | (USPAT)                                                    | OR | ON | ON | 2021/11/03 09:04 AM |
| L13 | 0 | (20080037801   6728385   20070160243   20040037428   20070223717   6023517   20050111683   20080137873   5251263   4837832   5867581   20060262938   8059847   20050254665   20050105750   20040234089   6415034)! [PN] | (US-PGPUB; USPAT)                                          | OR | ON | ON | 2021/11/03 09:04 AM |
| L14 | 0 | L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))                                                                                      | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L15 | 0 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L16 | 0 | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L17 | 0 | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L18 | 0 | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |

|     |   |                                                                                                                                            |                                                                     |    |    |    |                        |
|-----|---|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L19 | 0 | ambulance)) same<br>(((turn adj3 down) or<br>mute) with audio or<br>misic)                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L20 | 0 | ((detect\$3 or sensing)<br>with siren) same (((turn<br>adj3 down) or mute)<br>with audio or misic)                                         | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L21 | 0 | L20 not L19                                                                                                                                | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L22 | 0 | (asm or (ambient adj3<br>microphone)) same<br>(ecm or (ear adj3 canal<br>adj3 microphone))                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L23 | 0 | L22 and L6                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L24 | 0 | L23 and ((gain or<br>multiplier) with (ambient<br>or surround or<br>environmental) with<br>sound)                                          | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L25 | 0 | 8577052.pn. or<br>5541359.pn. or<br>5774567.pn. or<br>7421084.pn. or<br>7903826.pn. or<br>7986802.pn. or<br>8199942.pn. or<br>10361673.pn. | (USPAT)                                                             | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L26 | 0 | 20050207597 or<br>20030035551 or<br>20080165988 or<br>20030151678 or<br>20060222185                                                        | (US-PGPUB)                                                          | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L27 | 0 | 5299030                                                                                                                                    | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |
| L28 | 0 | 101401399                                                                                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2021/11/03<br>09:04 AM |

|     |       |                                                                                                                                                                                                                                                                                   |                                                            |    |    |    |                     |
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| L29 | 0     | 37603455.FMID.                                                                                                                                                                                                                                                                    | (USPAT; JPO; FPRS; US-PGPUB)                               | OR | ON | ON | 2021/11/03 09:04 AM |
| L30 | 0     | ecm or (ear adj4 canal adj4 microphone)                                                                                                                                                                                                                                           | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L31 | 0     | L30 and (L25 or L26 or L27 or L28)                                                                                                                                                                                                                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L32 | 0     | L30 and ((gain or multiplier or weight\$3 or factor) with (ambient or surround or environmental) with (acoustic or sound))                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L33 | 0     | L32 and ((mix\$3 or combin\$3 or blend\$3) with (audio or music or source))                                                                                                                                                                                                       | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L34 | 0     | L33 and (earbud or headphone or headset or earpiece)                                                                                                                                                                                                                              | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2021/11/03 09:04 AM |
| L35 | 0     | 20080165988                                                                                                                                                                                                                                                                       | (US-PGPUB)                                                 | OR | ON | ON | 2021/11/03 09:04 AM |
| L36 | 0     | L35 and (earbud or headphone or headset or earpiece)                                                                                                                                                                                                                              | (US-PGPUB)                                                 | OR | ON | ON | 2021/11/03 09:04 AM |
| L37 | 5     | "11244666".pn. OR "10810989".pn. OR "10535334".pn. OR "10134377".pn. OR "8917894".pn.                                                                                                                                                                                             | (USPAT)                                                    | OR | ON | ON | 2022/12/16 07:41 AM |
| L38 | 1262  | (Stanton near4 techiya).as. or (Steven near4 Goldstein).in. or (john near4 Beer).in. or (Marc near4 Boillot).in.                                                                                                                                                                  | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L39 | 94232 | ((((((((G10K11/17827)))))))).cpc. or (((((((G10K11/002)))))))).cpc. or (((((((H04R1/1016)))))))).cpc. or (((((((H04R1/1083)))))))).cpc. or (((((((H04R3/002)))))))).cpc. or (((((((H04R3/005)))))))).cpc. or (((((((H04R29/001)))))))).cpc. or (((((((H04R2225/41)))))))).cpc. or | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |

|     |        |                                                                                                                                                                                                                                                                      |                                                                     |    |    |    |                        |
|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L40 | 531846 | (((H04R2460/05))))<br>)).cpc. or<br>(((H04R2499/11))))<br>)).cpc.<br>L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                             | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L41 | 10     | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L42 | 1169   | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L43 | 373    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L44 | 81     | L7 and L4                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L45 | 292    | L7 not L8                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L46 | 1      | 8150044.pn.                                                                                                                                                                                                                                                          | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L47 | 39     | ("8150044")[URPN]                                                                                                                                                                                                                                                    | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L48 | 1      | ("8150044")[PN]                                                                                                                                                                                                                                                      | (USPAT)                                                             | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L49 | 17     | (20080037801  <br>6728385  <br>20070160243  <br>20040037428  <br>20070223717  <br>6023517  <br>20050111683  <br>20080137873  <br>5251263   4837832  <br>5867581  <br>20060262938  <br>8059847  <br>20050254665  <br>20050105750  <br>20040234089  <br>6415034)! [PN] | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2022/12/16<br>07:41 AM |

|     |     |                                                                                                                                                                           |                                                            |    |    |    |                     |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L50 | 247 | L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))                                        | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L51 | 840 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                     | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L52 | 46  | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L53 | 2   | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L54 | 3   | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic) | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L55 | 20  | ((detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L56 | 67  | ((detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic)                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L57 | 47  | L20 not L19                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L58 | 609 | (asm or (ambient adj3 microphone)) same (ecm or (ear adj3 canal adj3 microphone))                                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L59 | 148 | L22 and L6                                                                                                                                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2022/12/16 07:41 AM |
| L60 | 56  | L23 and ((gain or multiplier) with (ambient                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO;                         | OR | ON | ON | 2022/12/16 07:41 AM |

|     |       |                                                                                                                                                                                         |                                                                     |    |    |    |                        |
|-----|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L61 | 8     | or surround or environmental) with sound)<br>8577052.pn. or<br>5541359.pn. or<br>5774567.pn. or<br>7421084.pn. or<br>7903826.pn. or<br>7986802.pn. or<br>8199942.pn. or<br>10361673.pn. | DERWENT; IBM_TDB;<br>FPRS)<br>(USPAT)                               | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L62 | 5     | 20050207597 or<br>20030035551 or<br>20080165988 or<br>20030151678 or<br>20060222185                                                                                                     | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L63 | 13    | 5299030                                                                                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L64 | 21    | 101401399                                                                                                                                                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L65 | 9     | 37603455.FMID.                                                                                                                                                                          | (USPAT; JPO; FPRS;<br>US-PGPUB)                                     | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L66 | 86148 | ecm or (ear adj4 canal<br>adj4 microphone)                                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L67 | 4     | L30 and (L25 or L26 or<br>L27 or L28)                                                                                                                                                   | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L68 | 316   | L30 and ((gain or<br>multiplier or weight\$3 or<br>factor) with (ambient or<br>surround or<br>environmental) with<br>(acoustic or sound))                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L69 | 139   | L32 and ((mix\$3 or<br>conbin\$3 or blend\$3)<br>with (audio or music or<br>source))                                                                                                    | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L70 | 139   | L33 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L71 | 1     | 20080165988                                                                                                                                                                             | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L72 | 1     | L35 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                              | (US-PGPUB)                                                          | OR | ON | ON | 2022/12/16<br>07:41 AM |
| L73 | 3349  | ("20100296668" "60213                                                                                                                                                                   | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2022/12/16             |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |          |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|----------|
|  |  | 25" "6163508" "680464<br>3" "8611560" "2003015<br>2359" "20040109579" "<br>20050078838" "200600<br>83390" "20060188105" "<br>"20060264176" "20140<br>023203" "20150215701<br>" "5267321" "6021207" "<br>6606598" "6639987" "7<br>072482" "8160261" "87<br>98278" "20050058313" "<br>"20050288057" "20070<br>043563" "20090010456<br>" "20090024234" "3876<br>843" "6298323" "67482<br>38" "7562020" "849320<br>4" "9037458" "2011011<br>6643" "20140163976" "<br>5933510" "7464029" "7<br>477756" "8254591" "20<br>070291953" "20080165<br>988" "5208867" "65675<br>24" "6804638" "743029<br>9" "7433714" "8750295"<br> "20040264938" "20060<br>188075" "20080037801<br>" "6728385" "6754359" "<br>8917894" "9196247" "2<br>0010046304" "2004019<br>6992" "20060092043" "<br>20070189544" "201401<br>22092" "5903868" "913<br>5797" "20040086138" "<br>20060140425" "200901<br>22996" "6005525" "611<br>8877" "7903825" "8983<br>081" "20020106091" "2<br>0040042103" "2004020<br>3351" "20060173563" "<br>20060195322" "200700<br>86600" "20090076821" "<br>"6163338" "6661901" "9<br>123343" "20070036377<br>" "20080137873" "5923<br>624" "6415034" "74507<br>30" "8014553" "816027<br>3" "9491542" "2004012<br>5965" "20040190737" "<br>20050123146" "405474<br>9" "6226389" "7107109"<br> "7756285" "200301653<br>19" "20060204014" "20<br>080145032" "4088849" "<br>"7778434" "8625818" "8<br>718305" "RE38351" "20<br>100061564" "20110096<br>939" "20110264447" "4<br>947440" "7158933" "79 |  |  |  |  | 08:41 AM |
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|-----|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---------------------|
|     |        | 20557" "20020098878" "20050028212" "6359993" "7983907" "8140325" "8401200" "8045840" "20020118798" "20030161097" "20030165246" "20040109668" "20060067551" "20060083395" "20090286515" "20110293103" "20160104452" "6400652" "20020076057" "20020165719" "20050068171" "20060167687" "20070003090" "20070255435" "5327506" "5524056" "7039585" "7050592" "7209569" "7574917" "8086093" "8218784").PN |                                                                                                                                                                                                                                                                                                     |    |    |    |                     |
| L74 | 329546 | mix\$3 near4 (value OR ratio)                                                                                                                                                                                                                                                                                                                                                                        | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                   | OR | ON | ON | 2022/12/16 08:43 AM |
| L75 | 44     | L74 AND I73                                                                                                                                                                                                                                                                                                                                                                                          | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                   | OR | ON | ON | 2022/12/16 08:43 AM |
| L76 | 3      | "6647368".pn. OR "5251263".pn. OR "7903826".pn.                                                                                                                                                                                                                                                                                                                                                      | (USPAT)                                                                                                                                                                                                                                                                                             | OR | ON | ON | 2023/04/14 05:43 AM |
| L77 | 3      | "20010046304" OR "200400474861" OR "20060153394"                                                                                                                                                                                                                                                                                                                                                     | (US-PGPUB)                                                                                                                                                                                                                                                                                          | OR | ON | ON | 2023/04/14 05:52 AM |
| L78 | 121    | "1640972" OR "1519625"                                                                                                                                                                                                                                                                                                                                                                               | (USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/04/14 05:57 AM |
| L79 | 8      | (L76 OR L77) AND gain AND (mix\$3 OR combin\$5)                                                                                                                                                                                                                                                                                                                                                      | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                   | OR | ON | ON | 2023/04/14 06:08 AM |
| L80 | 183    | (earbud OR headphone OR headset OR earpiece) SAME ((sens\$3 OR detect\$3) WITH ((acute adj3 sound) OR (emergency adj3 (vehicle OR warning OR police OR siren OR ambulance))))                                                                                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO,                                                                                                       | OR | ON | ON | 2023/04/14 09:11 AM |

|     |      |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |    |    |                     |
|-----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---------------------|
| L81 | 1724 | ((microphone OR asm OR ASM) WITH (ambient OR environment OR external\$3)) SAME ((microphone OR ecm OR ECM) WITH ear WITH (adjacent OR inside OR close) WITH canal) | MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)<br>(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/04/14 09:16 AM |
| L82 | 11   | L80 AND I81                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)                                                                                                                           | OR | ON | ON | 2023/04/14 09:16 AM |
| L83 | 1030 | (earbud OR headphone OR headset OR earpiece) SAME ((sens\$3 OR detect\$3) WITH (sound WITH (acute OR emergency OR warning OR police OR siren OR ambulance))))      | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)                                                                                                                           | OR | ON | ON | 2023/04/14 09:22 AM |
| L84 | 20   | L81 AND I83                                                                                                                                                        | (US-PGPUB; USPAT; USOCR; FIT (AU, AP,                                                                                                                                                                                                                                                                                                                                                                                                          | OR | ON | ON | 2023/04/14 09:22 AM |

|     |        |                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |    |    |                     |
|-----|--------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---------------------|
| L85 | 9      | L84 NOT I82                                                                                                                 | AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)<br>(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/04/14 09:22 AM |
| L86 | 1      | "7903826".pn.                                                                                                               | (USPAT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | OR | ON | ON | 2023/04/14 09:25 AM |
| L87 | 44     | ("5276740"   "5448637"   "7206429"   "20020037746"   "20030118197").pn. OR ("7903826").urpn. AND (PGPB   USPT   USOC).dbnm. | (US-PGPUB; USPAT; USOCR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OR | ON | ON | 2023/04/14 09:25 AM |
| L88 | 452    | (mix\$3 OR combin\$3) WITH ((ambient OR environment\$3) near4 sound) WITH (audio near6 (record\$3 OR playback))             | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)                                                                                                                                                                                                                                                                                   | OR | ON | ON | 2023/04/14 09:50 AM |
| L89 | 236958 | (detect\$3 OR sens\$3)                                                                                                      | (US-PGPUB; USPAT;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OR | ON | ON | 2023/04/14          |

|     |         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                   |    |    |    |                        |
|-----|---------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|------------------------|
|     |         | WITH (acute OR siren<br>OR emergency OR<br>police OR ambulance)                   | USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB)                      |    |    |    | 09:52 AM               |
| L90 | 2845869 | (modify\$3 OR adjust\$4<br>OR chang\$3 OR<br>vary\$3) WITH (gain OR<br>amplitude) | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/04/14<br>09:54 AM |
| L91 | 0       | L90 AND L89 AND I88                                                               | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/04/14<br>09:54 AM |
| L92 | 2       | L88 AND I89                                                                       | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/04/14<br>09:55 AM |

|     |        |                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                              |    |    |    |                        |
|-----|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----|----|----|------------------------|
| L93 | 5      | "11244666".pn. OR<br>"10810989".pn. OR<br>"10535334".pn. OR<br>"10134377".pn. OR<br>"8917894".pn.                                                                                                                                                                                                                                                                                                                    | NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB)<br>(USPAT) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L94 | 1287   | (Stanton near4<br>techiya).as. or (Steven<br>near4 Goldstein).in. or<br>(john near4 Beer).in. or<br>(Marc near4 Boillot).in.                                                                                                                                                                                                                                                                                         | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)                                                          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L95 | 97034  | ((((((((G10K11/17827))))))<br>)).cpc. or<br>((((((((G10K11/002))))))<br>).cpc. or<br>((((((((H04R1/1016))))))<br>).cpc. or<br>((((((((H04R1/1083))))))<br>).cpc. or<br>((((((((H04R3/002))))))<br>).cpc. or<br>((((((((H04R3/005))))))<br>).cpc. or<br>((((((((H04R29/001))))))<br>).cpc. or<br>((((((((H04R2225/41))))<br>)).cpc. or<br>((((((((H04R2460/05))))<br>)).cpc. or<br>((((((((H04R2499/11))))<br>)).cpc. | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)                                                          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L96 | 542792 | L3 or G10k\$.cpc. or<br>H04R\$.cpc.                                                                                                                                                                                                                                                                                                                                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)                                                          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L97 | 10     | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)                                                          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L98 | 1204   | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                                                                                                                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)                                                          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L99 | 382    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;                                                                   | OR | ON | ON | 2023/05/11<br>06:28 AM |

|      |     |                                                                                                                                                                                                                                                                      |                                                                              |    |    |    |                        |
|------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----|----|----|------------------------|
| L100 | 83  | L7 and L4                                                                                                                                                                                                                                                            | FPRS)<br>(US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L101 | 299 | L7 not L8                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L102 | 1   | 8150044.pn.                                                                                                                                                                                                                                                          | (USPAT)                                                                      | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L103 | 43  | ("8150044")[URPN]                                                                                                                                                                                                                                                    | (USPAT)                                                                      | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L104 | 1   | ("8150044")[PN]                                                                                                                                                                                                                                                      | (USPAT)                                                                      | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L105 | 17  | (20080037801  <br>6728385  <br>20070160243  <br>20040037428  <br>20070223717  <br>6023517  <br>20050111683  <br>20080137873  <br>5251263   4837832  <br>5867581  <br>20060262938  <br>8059847  <br>20050254665  <br>20050105750  <br>20040234089  <br>6415034)! [PN] | (US-PGPUB; USPAT)                                                            | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L106 | 252 | L6 and ((notify or<br>notification) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                                                                                                                 | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L107 | 856 | (audio near4<br>(reproduc\$4 or<br>payback)) with (warning<br>or notification)                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L108 | 48  | L15 and ((reduc\$3 or<br>(turn\$3 adj3<br>down))near5 volume)                                                                                                                                                                                                        | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L109 | 2   | (microphone with<br>(detect\$3 or sensing)<br>with siren) same (((turn<br>adj3 down) or mute)<br>with audio or misic)                                                                                                                                                | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS)          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L110 | 3   | (microphone with<br>(detect\$3 or sensing)<br>with ((emergency adj3                                                                                                                                                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;                   | OR | ON | ON | 2023/05/11<br>06:28 AM |

|      |     |                                                                                                                                                           |                                                            |    |    |    |                     |
|------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
|      |     | vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic)                                               | FPRS)                                                      |    |    |    |                     |
| L111 | 20  | ((detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L112 | 67  | ((detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic) | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L113 | 47  | L20 not L19                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L114 | 633 | (asm or (ambient adj3 microphone)) same (ecm or (ear adj3 canal adj3 microphone))                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L115 | 154 | L22 and L6                                                                                                                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L116 | 56  | L23 and ((gain or multiplier) with (ambient or surround or environmental) with sound)                                                                     | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L117 | 8   | 8577052.pn. or 5541359.pn. or 5774567.pn. or 7421084.pn. or 7903826.pn. or 7986802.pn. or 8199942.pn. or 10361673.pn.                                     | (USPAT)                                                    | OR | ON | ON | 2023/05/11 06:28 AM |
| L118 | 5   | 20050207597 or 20030035551 or 20080165988 or 20030151678 or 20060222185                                                                                   | (US-PGPUB)                                                 | OR | ON | ON | 2023/05/11 06:28 AM |
| L119 | 13  | 5299030                                                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L120 | 22  | 101401399                                                                                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB;       | OR | ON | ON | 2023/05/11 06:28 AM |

|      |       |                                                                                                                                                                                                                                                                     |                                                                     |    |    |    |                        |
|------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L121 | 9     | 37603455.FMID.                                                                                                                                                                                                                                                      | FPRS)<br>(USPAT; JPO; FPRS;<br>US-PGPUB)                            | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L122 | 88435 | ecm or (ear adj4 canal<br>adj4 microphone)                                                                                                                                                                                                                          | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L123 | 16    | L30 and (L25 or L26 or<br>L27 or L28)                                                                                                                                                                                                                               | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L124 | 332   | L30 and ((gain or<br>multiplier or weight\$3 or<br>factor) with (ambient or<br>surround or<br>environmental) with<br>(acoustic or sound))                                                                                                                           | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L125 | 146   | L32 and ((mix\$3 or<br>conbin\$3 or blend\$3)<br>with (audio or music or<br>source))                                                                                                                                                                                | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L126 | 146   | L33 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                                                                                                          | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L127 | 1     | 20080165988                                                                                                                                                                                                                                                         | (US-PGPUB)                                                          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L128 | 1     | L35 and (earbud or<br>headphone or headset<br>or earpiece)                                                                                                                                                                                                          | (US-PGPUB)                                                          | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L129 | 5     | "11244666".pn. OR<br>"10810989".pn. OR<br>"10535334".pn. OR<br>"10134377".pn. OR<br>"8917894".pn.                                                                                                                                                                   | (USPAT)                                                             | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L130 | 1287  | (Stanton near4<br>techiya).as. or (Steven<br>near4 Goldstein).in. or<br>(john near4 Beer).in. or<br>(Marc near4 Boillot).in.                                                                                                                                        | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L131 | 97034 | (((((G10K11/17827))))<br>)).cpc. or<br>(((((G10K11/002))))))<br>).cpc. or<br>(((((H04R1/1016))))))<br>).cpc. or<br>(((((H04R1/1083))))))<br>).cpc. or<br>(((((H04R3/002)))))).<br>cpc. or<br>(((((H04R3/005)))))).<br>cpc. or<br>(((((H04R29/001))))))<br>).cpc. or | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |

|      |        |                                                                                                                                                                                                                                 |                                                                     |    |    |    |                        |
|------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|----|----|------------------------|
| L132 | 542792 | (((H04R2225/41)))<br>)).cpc. or<br>(((H04R2460/05)))<br>)).cpc. or<br>(((H04R2499/11)))<br>)).cpc.                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L133 | 10     | L2 and (microphone<br>and warning and<br>notification and<br>environment).clm.                                                                                                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L134 | 1204   | (earbud or headphone<br>or headset or earpiece)<br>same ((sens\$3 or<br>detect\$3) with ((acute<br>adj3 sound) or<br>(emergency adj3<br>vehicle or warning) or<br>police or siren or<br>ambulance))                             | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L135 | 382    | L6 and ((notify or<br>notification) near5 (user<br>or person))                                                                                                                                                                  | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L136 | 83     | L7 and L4                                                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L137 | 299    | L7 not L8                                                                                                                                                                                                                       | (US-PGPUB; USPAT;<br>USOCR; EPO; JPO;<br>DERWENT; IBM_TDB;<br>FPRS) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L138 | 1      | 8150044.pn.                                                                                                                                                                                                                     | (USPAT)                                                             | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L139 | 43     | ("8150044")[URPN]                                                                                                                                                                                                               | (USPAT)                                                             | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L140 | 1      | ("8150044")[PN]                                                                                                                                                                                                                 | (USPAT)                                                             | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L141 | 17     | (20080037801  <br>6728385  <br>20070160243  <br>20040037428  <br>20070223717  <br>6023517  <br>20050111683  <br>20080137873  <br>5251263   4837832  <br>5867581  <br>20060262938  <br>8059847  <br>20050254665  <br>20050105750 | (US-PGPUB; USPAT)                                                   | OR | ON | ON | 2023/05/11<br>06:28 AM |

|      |     |                                                                                                                                                                           |                                                            |    |    |    |                     |
|------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L142 | 252 | 20040234089   6415034)![PN]<br>L6 and ((notify or notification) with ((acute adj3 sound) or (emergency adj3 vehicle or warning) or police or siren or ambulance))         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L143 | 856 | (audio near4 (reproduc\$4 or payback)) with (warning or notification)                                                                                                     | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L144 | 48  | L15 and ((reduc\$3 or (turn\$3 adj3 down))near5 volume)                                                                                                                   | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L145 | 2   | (microphone with (detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L146 | 3   | (microphone with (detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic) | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L147 | 20  | ((detect\$3 or sensing) with siren) same (((turn adj3 down) or mute) with audio or misic)                                                                                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L148 | 67  | ((detect\$3 or sensing) with ((emergency adj3 vehicle) or warning or police or siren or ambulance)) same (((turn adj3 down) or mute) with audio or misic)                 | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L149 | 47  | L20 not L19                                                                                                                                                               | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L150 | 633 | (asm or (ambient adj3 microphone)) same (ecm or (ear adj3 canal adj3 microphone))                                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L151 | 154 | L22 and L6                                                                                                                                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |

|      |       |                                                                                                                            |                                                            |    |    |    |                     |
|------|-------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----|----|----|---------------------|
| L152 | 56    | L23 and ((gain or multiplier) with (ambient or surround or environmental) with sound)                                      | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L153 | 8     | 8577052.pn. or 5541359.pn. or 5774567.pn. or 7421084.pn. or 7903826.pn. or 7986802.pn. or 8199942.pn. or 10361673.pn.      | (USPAT)                                                    | OR | ON | ON | 2023/05/11 06:28 AM |
| L154 | 5     | 20050207597 or 20030035551 or 20080165988 or 20030151678 or 20060222185                                                    | (US-PGPUB)                                                 | OR | ON | ON | 2023/05/11 06:28 AM |
| L155 | 13    | 5299030                                                                                                                    | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L156 | 22    | 101401399                                                                                                                  | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L157 | 9     | 37603455.FMID.                                                                                                             | (USPAT; JPO; FPRS; US-PGPUB)                               | OR | ON | ON | 2023/05/11 06:28 AM |
| L158 | 88435 | ecm or (ear adj4 canal adj4 microphone)                                                                                    | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L159 | 16    | L30 and (L25 or L26 or L27 or L28)                                                                                         | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L160 | 332   | L30 and ((gain or multiplier or weight\$3 or factor) with (ambient or surround or environmental) with (acoustic or sound)) | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L161 | 146   | L32 and ((mix\$3 or combin\$3 or blend\$3) with (audio or music or source))                                                | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L162 | 146   | L33 and (earbud or headphone or headset or earpiece)                                                                       | (US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; FPRS) | OR | ON | ON | 2023/05/11 06:28 AM |
| L163 | 1     | 20080165988                                                                                                                | (US-PGPUB)                                                 | OR | ON | ON | 2023/05/11 06:28 AM |
| L164 | 1     | L35 and (earbud or headphone or headset                                                                                    | (US-PGPUB)                                                 | OR | ON | ON | 2023/05/11 06:28 AM |

|      |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |    |    |    |                        |
|------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----|----|----|------------------------|
| L165 | 3530 | or earpiece)<br>("20100296668" "60213<br>25" "6163508" "680464<br>3" "8611560" "2003015<br>2359" "20040109579" "<br>20050078838" "200600<br>83390" "20060188105" "<br>"20060264176" "20140<br>023203" "20150215701<br>" "5267321" "6021207" "<br>6606598" "6639987" "7<br>072482" "8160261" "87<br>98278" "20050058313" "<br>"20050288057" "20070<br>043563" "20090010456<br>" "20090024234" "3876<br>843" "6298323" "67482<br>38" "7562020" "849320<br>4" "9037458" "2011011<br>6643" "20140163976" "<br>5933510" "7464029" "7<br>477756" "8254591" "20<br>070291953" "20080165<br>988" "5208867" "65675<br>24" "6804638" "743029<br>9" "7433714" "8750295"<br> "20040264938" "20060<br>188075" "20080037801<br>" "6728385" "6754359" "<br>8917894" "9196247" "2<br>0010046304" "2004019<br>6992" "20060092043" "<br>20070189544" "201401<br>22092" "5903868" "913<br>5797" "20040086138" "<br>20060140425" "200901<br>22996" "6005525" "611<br>8877" "7903825" "8983<br>081" "20020106091" "2<br>0040042103" "2004020<br>3351" "20060173563" "<br>20060195322" "200700<br>86600" "20090076821" "<br>"6163338" "6661901" "9<br>123343" "20070036377<br>" "20080137873" "5923<br>624" "6415034" "74507<br>30" "8014553" "816027<br>3" "9491542" "2004012<br>5965" "20040190737" "<br>20050123146" "405474<br>9" "6226389" "7107109"<br> "7756285" "200301653<br>19" "20060204014" "20<br>080145032" "4088849" "<br>"7778434" "8625818" "8<br>718305" "RE38351" "20<br>100061564" "20110096 | (US-PGPUB; USPAT) | OR | ON | ON | 2023/05/11<br>06:28 AM |
|------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----|----|----|------------------------|

|      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                               |    |    |    |                        |
|------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|------------------------|
|      |        | 939" "20110264447" "4<br>947440" "7158933" "79<br>20557" "20020098878" "<br>"20050028212" "63599<br>93" "7983907" "814032<br>5" "8401200" "8045840"<br> "20020118798" "20030<br>161097" "20030165246<br>" "20040109668" "2006<br>0067551" "2006008339<br>5" "20090286515" "201<br>10293103" "201601044<br>52" "6400652" "200200<br>76057" "20020165719" "<br>"20050068171" "20060<br>167687" "20070003090<br>" "20070255435" "5327<br>506" "5524056" "70395<br>85" "7050592" "720956<br>9" "7574917" "8086093"<br> "8218784").PN |                                                                                                                                                                                                                                                                                                                                               |    |    |    |                        |
| L166 | 336659 | mix\$3 near4 (value OR<br>ratio)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                                                             | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L167 | 45     | L74 AND I73                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                                                             | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L168 | 3      | "6647368".pn. OR<br>"5251263".pn. OR<br>"7903826".pn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | (USPAT)                                                                                                                                                                                                                                                                                                                                       | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L169 | 3      | "20010046304" OR<br>"200400474861" OR<br>"20060153394"                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | (US-PGPUB)                                                                                                                                                                                                                                                                                                                                    | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L170 | 121    | "1640972" OR<br>"1519625"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | (USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L171 | 9      | (L76 OR L77) AND gain<br>AND (mix\$3 OR<br>combin\$5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | (US-PGPUB; USPAT)                                                                                                                                                                                                                                                                                                                             | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L172 | 188    | (earbud OR headphone<br>OR headset OR<br>earpiece) SAME<br>((sens\$3 OR detect\$3)<br>WITH ((acute adj3<br>sound) OR (emergency<br>adj3 (vehicle OR                                                                                                                                                                                                                                                                                                                                                                              | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,                                                                                                                                                                           | OR | ON | ON | 2023/05/11<br>06:28 AM |

|      |      |                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    |    |    |                     |
|------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---------------------|
| L173 | 1733 | warning OR police OR siren OR ambulance))))<br><br>((microphone OR asm OR ASM) WITH (ambient OR environment OR external\$3)) SAME ((microphone OR ecm OR ECM) WITH ear WITH (adjacent OR inside OR close) WITH canal) | IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)<br>(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/05/11 06:28 AM |
| L174 | 11   | L80 AND I81                                                                                                                                                                                                           | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)                                                                                                                                                                       | OR | ON | ON | 2023/05/11 06:28 AM |
| L175 | 1041 | (earbud OR headphone OR headset OR earpiece) SAME ((sens\$3 OR detect\$3) WITH (sound WITH (acute OR emergency OR warning OR police OR siren OR ambulance))))                                                         | (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)                                                                                                                                                                       | OR | ON | ON | 2023/05/11 06:28 AM |

|      |     |                                                                                                                             |                                                                                                                                                                                                                                                                                                                      |    |    |    |                     |
|------|-----|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---------------------|
| L176 | 20  | L81 AND I83                                                                                                                 | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/05/11 06:28 AM |
| L177 | 9   | L84 NOT I82                                                                                                                 | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/05/11 06:28 AM |
| L178 | 1   | "7903826".pn.                                                                                                               | (USPAT)                                                                                                                                                                                                                                                                                                              | OR | ON | ON | 2023/05/11 06:28 AM |
| L179 | 46  | ("5276740"   "5448637"   "7206429"   "20020037746"   "20030118197").pn. OR ("7903826").urpn. AND (PGPB   USPT   USOC).dbnm. | (US-PGPUB; USPAT; USOCR)                                                                                                                                                                                                                                                                                             | OR | ON | ON | 2023/05/11 06:28 AM |
| L180 | 458 | (mix\$3 OR combin\$3) WITH ((ambient OR environment\$3) near4 sound) WITH (audio near6 (record\$3 OR playback))             | (US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB) | OR | ON | ON | 2023/05/11 06:28 AM |

|      |         |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                   |    |    |    |                        |
|------|---------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|------------------------|
| L181 | 239234  | (detect\$3 OR sens\$3)<br>WITH (acute OR siren<br>OR emergency OR<br>police OR ambulance) | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L182 | 2861102 | (modify\$3 OR adjust\$4<br>OR chang\$3 OR<br>vary\$3) WITH (gain OR<br>amplitude)         | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L183 | 0       | L90 AND L89 AND I88                                                                       | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,<br>MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) | OR | ON | ON | 2023/05/11<br>06:28 AM |
| L184 | 2       | L88 AND I89                                                                               | (US-PGPUB; USPAT;<br>USOCR; FIT (AU, AP,<br>AT, BE, BG, BR, BY,<br>CA, CH, CN, CS, CU,<br>CZ, DD, DE, DK, EA,<br>EE, EP, ES, FI, FR, GB,<br>HR, HU, ID, IE, IL, IS,<br>IT, JP, KR, LT, LU, LV,<br>MA, OA, RU, SU, WO,                                                                                                                                             | OR | ON | ON | 2023/05/11<br>06:28 AM |

|  |  |  |                                                                                                                                          |  |  |  |  |
|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
|  |  |  | MC, MD, MY, NL, NO,<br>NZ, PH, PL, PT, RO,<br>RS, SE, SG, SI, SK,<br>TH, TN, TR, TW, UA,<br>VN); FPRS; EPO;<br>JPO; DERWENT;<br>IBM_TDB) |  |  |  |  |
|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|

## PE2E SEARCH - Search History (Interference)

| Ref # | Hits | Search Query                                                                                                                       | DBs               | Default Operator | Plurals | British Equivalents | Time Stamp          |
|-------|------|------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------|---------|---------------------|---------------------|
| N1    | 0    | (earphone and microphone and ambient and (ear adj3 canal) and speaker and memory and processor and gain and mixing and audio).clm. | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2021/11/03 09:04 AM |
| N37   | 24   | (earpiece AND microphone AND audio AND ambient AND gain AND mix\$3).clm.                                                           | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2023/04/14 09:57 AM |
| N38   | 3    | (microphone AND audio AND canal AND ambient AND acute AND modif\$3 AND mix\$3).clm.                                                | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2023/04/14 10:04 AM |
| N39   | 0    | (earpeice AND memory AND processor AND microphone AND gain AND ambient AND audio AND mix\$3).clm.                                  | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2023/05/11 06:30 AM |
| N40   | 6    | (earpiece AND memory AND processor AND microphone AND gain AND ambient AND audio AND mix\$3).clm.                                  | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2023/05/11 06:30 AM |
| N41   | 1    | (earpiece AND memory AND processor AND microphone AND modify\$3 AND second AND ambient AND audio AND acute AND mix\$3).clm.        | (US-PGPUB; USPAT) | OR               | ON      | ON                  | 2023/05/11 06:37 AM |

| Electronic Acknowledgement Receipt          |                                                              |
|---------------------------------------------|--------------------------------------------------------------|
| <b>EFS ID:</b>                              | 48056813                                                     |
| <b>Application Number:</b>                  | 17592143                                                     |
| <b>International Application Number:</b>    |                                                              |
| <b>Confirmation Number:</b>                 | 3471                                                         |
| <b>Title of Invention:</b>                  | METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION |
| <b>First Named Inventor/Applicant Name:</b> | Steven Wayne Goldstein                                       |
| <b>Customer Number:</b>                     | 150139                                                       |
| <b>Filer:</b>                               | John Patrick Keady                                           |
| <b>Filer Authorized By:</b>                 |                                                              |
| <b>Attorney Docket Number:</b>              | 11472-27-5_CONT-17321892                                     |
| <b>Receipt Date:</b>                        | 25-MAY-2023                                                  |
| <b>Filing Date:</b>                         | 03-FEB-2022                                                  |
| <b>Time Stamp:</b>                          | 10:39:05                                                     |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                  |

### Payment information:

|                        |    |
|------------------------|----|
| Submitted with Payment | no |
|------------------------|----|

### File Listing:

| Document Number | Document Description                              | File Name            | File Size(Bytes)/<br>Message Digest          | Multi Part /.zip | Pages (if appl.) |
|-----------------|---------------------------------------------------|----------------------|----------------------------------------------|------------------|------------------|
| 1               | Amendment after Notice of Allowance<br>(Rule 312) | 17592143_312_JPK.pdf | 173550                                       | no               | 6                |
|                 |                                                   |                      | fa94e723d2a2d1953546b86220d7c863ba0<br>2a929 |                  |                  |

### Warnings:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 173550 |
| <p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> <b>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</b></p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> <b>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</b></p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> <b>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</b></p> |        |

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO. : 17/592,143 CONFIRMATION No. 3471  
APPLICATION OF : Steven Wayne Goldstein  
DATE FILED : 3 Feb. 2022  
EXAMINER : SNIEZEK, ANDREW L  
TC/A.U. : 2688  
DOCKET : CONT-17321892  
TITLE : METHOD AND DEVICE FOR ACUTE SOUND  
DETECTION AND REPRODUCTION

**312 Amendment**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Date: May 25, 2023

Sir:

The claim amendments herein are clarifying amendments and are not intended to add any new matter. Please amend the above-identified patent application as follows:

- **Amendments to the Claims** begin on page 2 of this paper.

Should the Examiner believe that anything further is necessary, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

**TECHIYA LLC**

Date: May 25, 2023

/John P. Keady/  
John P. Keady  
Ph.D. (Physics), Ph.D. (Comp. Sci.)  
CTO and Assistant General Counsel of IP  
Reg. No. 56,389  
571-606-1291

### **AMENDMENTS TO THE CLAIMS**

The following listing of claims will replace all prior versions, and listings, of claims in the application.

#### **Listing of Claims:**

1.(currently amended) A device that can control ambient passthrough in an earpiece comprising:

a first memory that stores instructions; and

a processor that executes the instructions to perform operations, the operations comprising:

communicatively connecting to an earpiece, wherein the earpiece includes a first microphone, a second microphone, a speaker, a second memory and an earpiece processor;

sending an audio content gain value and an ambient sound gain value to the earpiece; and

sending an audio content signal to the earpiece, wherein the earpiece processor ~~is configured to:~~

appl[[y]]ies the audio content gain value to the audio content signal to generate a modified audio content signal[[;]], wherein the earpiece processor

appl[[y]]ies the ambient sound gain value to an ambient sound signal to generate a modified ambient sound signal[[;]], and wherein the earpiece processor

~~mixes~~ the modified ambient sound signal with the modified audio content signal to generate a mixed signal.

2.(currently amended) The device according to claim 1, wherein the earpiece processor ~~is configured to~~ calculates a noise level based upon a first microphone

signal from the first microphone, wherein the earpiece processor modifies the mixed signal ~~and vary the mixing~~ based upon the noise level.

3.(currently amended) The device according to claim 1, wherein the earpiece processor ~~is configured to~~ generates the ambient sound signal from a first microphone signal from the first microphone.

4.(previously presented) The device according to claim 1 further including a user interface.

5.(currently amended) The device according to claim 1, wherein the earpiece processor ~~is configured to appl~~[[y]]ies an ambient gain to a first microphone signal from the first microphone to generate ~~an~~ the ambient sound signal.

6.(currently amended) A device that can control ambient sound passthrough comprising:

- a first microphone ~~configured to~~ that measures a first acoustic environment to generate a first microphone signal;

- a second microphone ~~configured to be~~ that is positioned closer to a user's ear canal than the first microphone when the device is worn, where the second microphone ~~is configured to~~ generates a second microphone signal;

- a speaker;

- a memory that stores instructions; and

- a processor that executes the instructions to perform operations, the operations comprising:

- receiving an audio content signal;

- modifying the audio content signal to generate a modified audio content signal;

- modifying the first microphone signal to generate a modified first microphone signal;

modifying the second microphone signal to generate a modified second microphone signal;

generating an ambient sound signal from at least one of the modified first microphone signal, the modified second microphone signal or a combination thereof;

detecting an acute sound by analyzing at least one of the modified first microphone signal, the modified second microphone signal or a combination thereof;

modifying the modified audio content signal if an acute sound is detected to generate a new modified audio content signal;

generating a mixed signal by mixing the ambient sound signal with the modified audio content signal or the new modified audio content signal; and

sending the mixed signal to the speaker.

7.(previously presented) The device according to claim 6, wherein the operations further comprise:

determining if the acute sound is a user's voice by analyzing the temporal and spectral characteristics of at least one of the modified first microphone signal, the modified second microphone signal or a combination thereof.

8.(previously presented) The device according to claim 7, wherein the operations further comprise:

generating a noise signal from at least one of the modified first microphone signal, the modified second microphone signal, or both.

generating a noise reduction signal.

9.(previously presented) The device according to claim 8, wherein the operations further comprise:

mixing the noise reduction signal with the mixed signal to generate a new mixed signal, and sending the new mixed signal to the speaker instead of the mixed signal.

10.(previously presented) The device according to claim 9, wherein the operations further comprise:

    sending a modified ambient signal to the speaker instead of the new mixed signal if the user's voice is detected.

11.(previously presented) The device according to claim 7, wherein the operations further comprise:

    sending a modified ambient signal to the speaker instead of the mixed signal if the user's voice is detected.

12.(previously presented) The device according to claim 7, wherein the operations further comprise:

    detecting whether the acute sound is at least one of a warning sound, siren, voice, specific noise type, or a combination, by analyzing the spectrum of at least one of the modified first microphone signal, the modified second microphone signal, the modified ambient sound signal, or a combination.

13.(previously presented) The device according to claim 12, wherein the operations further comprise:

    decreasing a volume of the modified audio content signal when a warning or siren is detected.

14.(previously presented) The device according to claim 6, wherein the operations further comprise:

    decreasing a volume of the modified audio content signal when a user's voice is detected.

15.(previously presented) The device according to claim 12, where the operations further comprise:

    sending a notification signal to the speaker if the acute sound is a warning sound or siren.

16.(previously presented) The device according to claim 15, wherein the warning sound is at least one of a bell, an emergency vehicle, the sound of a security system or a combination thereof.

17.(previously presented) The device according to claim 12, wherein if an alarm is detected it is at least one of a police siren, an ambulance siren, a car honking or a combination thereof.

18.(previously presented) The device according to claim 1, wherein the device is a portable communication device.

19.(previously presented) The device according to claim 18, where the device portable communication device is at least one of a phone, a watch, a tablet, earpiece, a laptop computer or a combination thereof.

20.(previously presented) The device according to claim 6, wherein the acute sound is a voice.

## FEE ADDRESS INDICATION FORM

|                     |                        |                      |                          |
|---------------------|------------------------|----------------------|--------------------------|
| Application Number  | 17592143               | Art Unit             | 2688                     |
| Filing Date         | 03-Feb-2022            | Examiner Name        | ANDREW SNIEZEK           |
| First Name Inventor | Steven Wayne Goldstein | Attorney Doc. Number | 11472-27-5_CONT-17321892 |

**INSTRUCTIONS:** In order for the fee address identified on this form to be effective, the issue fee must have been paid for the application listed on this form. Only an address represented by a customer number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. For more information on customer numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

**Please recognize as the Fee Address under the provisions of 37 CFR 1.363 the address associated with:**

|                  |                                                                                                                                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Customer Number: | 154598<br>Staton Techiya, LLC<br>John Keady<br>9501 Jagged Creek Ct<br><br>Delray Beach FL 33446<br>UNITED STATES<br>(571) 606-1291<br>yasmin.seyal@techiya.co |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Signature :**

*I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application.*

|                  |                      |                            |            |
|------------------|----------------------|----------------------------|------------|
| <b>Signature</b> | /Peter A. Chiabotti/ | <b>Date</b>                | 06-01-2023 |
| <b>Name</b>      | Peter A. Chiabotti   | <b>Registration Number</b> | 54603      |

| Electronic Patent Application Fee Transmittal      |                 |                                                              |               |                             |
|----------------------------------------------------|-----------------|--------------------------------------------------------------|---------------|-----------------------------|
| <b>Application Number:</b>                         |                 | 17592143                                                     |               |                             |
| <b>Filing Date:</b>                                |                 | 03-Feb-2022                                                  |               |                             |
| <b>Title of Invention:</b>                         |                 | METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION |               |                             |
| <b>First Named Inventor/Applicant Name:</b>        |                 | Steven Wayne Goldstein                                       |               |                             |
| <b>Filer:</b>                                      |                 | Peter Allen Chiabotti/Yoshi Hassan                           |               |                             |
| <b>Attorney Docket Number:</b>                     |                 | 11472-27-5_CONT-17321892                                     |               |                             |
| Filed as Small Entity                              |                 |                                                              |               |                             |
| <b>Filing Fees for Utility under 35 USC 111(a)</b> |                 |                                                              |               |                             |
| <b>Description</b>                                 | <b>Fee Code</b> | <b>Quantity</b>                                              | <b>Amount</b> | <b>Sub-Total in USD(\$)</b> |
| <b>Basic Filing:</b>                               |                 |                                                              |               |                             |
| UTILITY APPL ISSUE FEE                             | 2501            | 1                                                            | 480           | 480                         |
| PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL             | 1504            | 1                                                            | 0             | 0                           |
| <b>Pages:</b>                                      |                 |                                                              |               |                             |
| <b>Claims:</b>                                     |                 |                                                              |               |                             |
| <b>Miscellaneous-Filing:</b>                       |                 |                                                              |               |                             |
| <b>Petition:</b>                                   |                 |                                                              |               |                             |
| <b>Patent-Appeals-and-Interference:</b>            |                 |                                                              |               |                             |

| Description                              | Fee Code | Quantity | Amount | Sub-Total in USD(\$) |
|------------------------------------------|----------|----------|--------|----------------------|
| <b>Post-Allowance-and-Post-Issuance:</b> |          |          |        |                      |
| <b>Extension-of-Time:</b>                |          |          |        |                      |
| <b>Miscellaneous:</b>                    |          |          |        |                      |
| <b>Total in USD (\$)</b>                 |          |          |        | <b>480</b>           |

| Electronic Acknowledgement Receipt          |                                                              |
|---------------------------------------------|--------------------------------------------------------------|
| <b>EFS ID:</b>                              | 48087704                                                     |
| <b>Application Number:</b>                  | 17592143                                                     |
| <b>International Application Number:</b>    |                                                              |
| <b>Confirmation Number:</b>                 | 3471                                                         |
| <b>Title of Invention:</b>                  | METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION |
| <b>First Named Inventor/Applicant Name:</b> | Steven Wayne Goldstein                                       |
| <b>Customer Number:</b>                     | 150139                                                       |
| <b>Filer:</b>                               | Peter Allen Chiabotti/Yoshi Hassan                           |
| <b>Filer Authorized By:</b>                 | Peter Allen Chiabotti                                        |
| <b>Attorney Docket Number:</b>              | 11472-27-5_CONT-17321892                                     |
| <b>Receipt Date:</b>                        | 01-JUN-2023                                                  |
| <b>Filing Date:</b>                         | 03-FEB-2022                                                  |
| <b>Time Stamp:</b>                          | 16:11:07                                                     |
| <b>Application Type:</b>                    | Utility under 35 USC 111(a)                                  |

### Payment information:

|                                                                                                                |                  |
|----------------------------------------------------------------------------------------------------------------|------------------|
| Submitted with Payment                                                                                         | yes              |
| Payment Type                                                                                                   | DA               |
| Payment was successfully received in RAM                                                                       | \$480            |
| RAM confirmation Number                                                                                        | E202361G11066174 |
| Deposit Account                                                                                                |                  |
| Authorized User                                                                                                |                  |
| The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: |                  |

| <b>File Listing:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                |                     |                                           |                  |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------|-------------------------------------------|------------------|------------------|
| Document Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Document Description           | File Name           | File Size(Bytes)/<br>Message Digest       | Multi Part /.zip | Pages (if appl.) |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Issue Fee Payment (PTO-85B)    | Web85b.pdf          | 60838                                     | no               | 2                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                     | f24e942d3a3e50110b0f0bf92cce7ce54aa       |                  |                  |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                     |                                           |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                     |                                           |                  |                  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Maintenance Fee Address Change | web85feeaddress.pdf | 42592                                     | no               | 1                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                     | 9848c2ea92cc3abab7c64da9b3891d2aab532b3db |                  |                  |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                     |                                           |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                     |                                           |                  |                  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Fee Worksheet (SB06)           | fee-info.pdf        | 40317                                     | no               | 2                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                     | 3fb8347d67782d02f8626a014a2ab6f738dae448  |                  |                  |
| <b>Warnings:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                     |                                           |                  |                  |
| <b>Information:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                     |                                           |                  |                  |
| <b>Total Files Size (in bytes):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                     | 143747                                    |                  |                  |
| <p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b><u>New Applications Under 35 U.S.C. 111</u></b><br/> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><b><u>National Stage of an International Application under 35 U.S.C. 371</u></b><br/> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><b><u>New International Application Filed with the USPTO as a Receiving Office</u></b><br/> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p> |                                |                     |                                           |                  |                  |

Document Description: Issue Fee Payment (PTO-85B)

**Issue Fee Transmittal Form**

| Application Number | Filing Date | First Named Inventor   | Atty. Docket No.        | Confirmation No. |
|--------------------|-------------|------------------------|-------------------------|------------------|
| 17592143           | 03-Feb-2022 | Steven Wayne Goldstein | 11472-27-5_CONT-1732189 | 3471             |

**TITLE OF INVENTION :**

METHOD AND DEVICE FOR ACUTE SOUND DETECTION AND REPRODUCTION

| Entity Status | Application Type            | Art Unit         | Class - Subclass | EXAMINER       |
|---------------|-----------------------------|------------------|------------------|----------------|
| Small         | Utility under 35 USC 111(a) | 2688             | 056000           | ANDREW SNIEZEK |
| Issue Fee Due | Publication Due             | Total Fee(s) Due | Date Due         | Prev. Paid Fee |
| \$480         | \$0                         | \$480            | 23-Aug-2023      | \$0            |

**1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)**

| Current Correspondence Address:                                                                                                                            | Current Indicated Fee Address :                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 150139<br>Akerman LLP<br><br>777 South Flagler Drive<br>Suite 1100 West Tower<br>West Palm Beach FL 33401<br>UNITED STATES<br>5616535000<br>ip@akerman.com |                                                                                                                |
| <input type="checkbox"/> Change of correspondence address requested, system generated AIA/122-EFS form attached                                            | <input checked="" type="checkbox"/> Fee Address indication requested, system generated SB/47-EFS form attached |

**2.Entity Status****Change in Entity Status**

Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.

Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.



Applicant asserting small entity status. See 37 CFR 1.27.

Note: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.



Applicant changing to regular undiscounted fee status.

Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.



Document Description: Issue Fee Payment (PTO-85B)

**3.The Following Fee(s) Are Submitted:**☒ Issue Fee☐ I authorize USPTO to apply my previously paid issue fee to the current fees due☐ Publication Fee☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number \_\_\_\_\_

If **in addition to** the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency, or credit any overpayment, to Deposit Account Number 500951.

☒ The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

**4.Firm and/or Attorney Names To Be Printed****NOTE: If no name is listed, no name will be printed**

For printing on the patent front page, list to be displayed as entered

1. Akerman LLP

2. Peter A. Chiabotti

3.

**5.Assignee Name(s) and Residence Data To Be Printed**

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

| Name               | City         | State   | Country       | Category    |
|--------------------|--------------|---------|---------------|-------------|
| Staton Techiya LLC | Delray Beach | FLORIDA | UNITED STATES | corporation |

**6.Signature**

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

|           |                      |                     |            |
|-----------|----------------------|---------------------|------------|
| Signature | /Peter A. Chiabotti/ | Date                | 06-01-2023 |
| Name      | Peter A. Chiabotti   | Registration Number | 54603      |



# UNITED STATES PATENT AND TRADEMARK OFFICE

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| APPLICATION NO.           | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|---------------------------|-------------|------------------------|--------------------------|------------------|
| 17/592,143                | 02/03/2022  | Steven Wayne Goldstein | 11472-27-5_CONT-17321892 | 3471             |
| 150139                    | 7590        | 06/05/2023             | EXAMINER                 |                  |
| Akerman LLP               |             |                        | SNIEZEK, ANDREW L        |                  |
| 777 South Flagler Drive   |             |                        |                          |                  |
| Suite 1100 West Tower     |             |                        |                          |                  |
| West Palm Beach, FL 33401 |             |                        |                          |                  |
|                           |             |                        | ART UNIT                 | PAPER NUMBER     |
|                           |             |                        | 2688                     |                  |
|                           |             |                        | NOTIFICATION DATE        | DELIVERY MODE    |
|                           |             |                        | 06/05/2023               | ELECTRONIC       |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@akerman.com  
jp.keady@techiya.co  
personics\_docketing@cardinal-ip.com

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                      |                                         |                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------|--------------------------------|
| <b>Response to Rule 312 Communication</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Application No.</b><br>17/592,143 | <b>Applicant(s)</b><br>Goldstein et al. |                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Examiner</b><br>ANDREW SNIEZEK    | <b>Art Unit</b><br>2688                 | <b>AIA (FITF) Status</b><br>No |
| <b>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |                                         |                                |
| <p>1. <input checked="" type="checkbox"/> The amendment filed on <u>25 May 2023</u> under 37 CFR 1.312 has been considered, and has been:</p> <p>a) <input type="checkbox"/> entered.</p> <p>b) <input checked="" type="checkbox"/> entered as directed to matters of form not affecting the scope of the invention.</p> <p>c) <input type="checkbox"/> disapproved because the amendment was filed after the payment of the issue fee.<br/> Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.</p> <p>d) <input type="checkbox"/> disapproved. See explanation below.</p> <p>e) <input type="checkbox"/> entered in part. See explanation below.</p> <p>f) <input type="checkbox"/> not entered because the supplemental or corrected Application Data sheet (ADS)</p> <p><input type="checkbox"/> was not accompanied by a petition to accept an unintentionally delayed claim under 37 CFR 1.55 or 27 CFR 1.78;</p> <p><input type="checkbox"/> did not identify the information being changed in accordance with 37 CFR 1.76(c)(2);</p> <p><input type="checkbox"/> was not properly signed in accordance with 37 CFR 1.76(e) (or 37 CFR 1.33(b) for applications filed prior to September 16, 2012).</p> <p>_____</p> |                                      |                                         |                                |
| /ANDREW L SNIEZEK/<br>Primary Examiner, Art Unit 2688                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                         |                                |

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO. : 17/592,143 CONFIRMATION No. 3471  
APPLICATION OF : Steven Wayne Goldstein  
DATE FILED : 3 Feb. 2022  
EXAMINER : SNIEZEK, ANDREW L  
TC/A.U. : 2688  
DOCKET : CONT-17321892  
TITLE : METHOD AND DEVICE FOR ACUTE SOUND  
DETECTION AND REPRODUCTION

OK TO ENTER: /A.L.S/

**312 Amendment**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Date: May 25, 2023

Sir:

The claim amendments herein are clarifying amendments and are not intended to add any new matter. Please amend the above-identified patent application as follows:

- **Amendments to the Claims** begin on page 2 of this paper.

Should the Examiner believe that anything further is necessary, the Examiner is respectfully requested to contact the undersigned representative at the telephone number listed below.

Respectfully submitted,

**TECHIYA LLC**

Date: May 25, 2023

/John P. Keady/  
John P. Keady  
Ph.D. (Physics), Ph.D. (Comp. Sci.)  
CTO and Assistant General Counsel of IP  
Reg. No. 56,389  
571-606-1291

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**  
( Not for submission under 37 CFR 1.99)

|                        |                        |
|------------------------|------------------------|
| Application Number     | 17592143               |
| Filing Date            | 2022-02-03             |
| First Named Inventor   | Steven Wayne Goldstein |
| Art Unit               | OPAP                   |
| Examiner Name          | UNKNOWN                |
| Attorney Docket Number | CONT-17321892          |

|                                                   |   |            |    |         |       |  |  |
|---------------------------------------------------|---|------------|----|---------|-------|--|--|
| Change(s) applied to document, /S.J.W./ 5/24/2023 | 7 | 2009023784 | WO | 02/2009 | Usher |  |  |
|                                                   | 8 | 2012097150 | WO | 07/2012 | Usher |  |  |

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| Attorney Docket Number | CONT-17321892          |

|    |             |            |           |
|----|-------------|------------|-----------|
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| 29 | 20090122996 | 2009-05-14 | Klein     |
| 30 | 20040086138 | 2004-05-06 | Kuth      |

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|-------------------|---------|--------------------------------------|----------------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|----------------|
|                   | 1       | 2006054698                           | WO                         |                        | 05/2006          | Murata                                          |                                                                          |                |
|                   | 2       | EP1401240                            | EP                         |                        | 03/2004          | Jensen                                          |                                                                          |                |
|                   | 3       | 2008050583                           | WO                         |                        | 05/2008          | Kitada                                          |                                                                          |                |
|                   | 4       | 2007092660                           | WO                         |                        | 08/2007          | Moberly                                         |                                                                          |                |
|                   | 5       | 2004114722                           | WO                         |                        | 12/2004          | Pedersen                                        |                                                                          |                |
|                   | 6       | EP1385324                            | EP                         |                        | 01/2004          | Pedersen                                        |                                                                          |                |

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| Art Unit               | OPAP                   |  |
| Examiner Name          | UNKNOWN                |  |
| Attorney Docket Number | CONT-17321892          |  |

|  |    |             |  |            |                        |  |
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|  | 34 | 20060173563 |  | 2006-08-03 | Borovitski; Michael D. |  |
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|-------------------|---------|--------------------------------------|----------------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|----------------|
|                   | 1       | EP1519625                            | EP                         | A2                     | 05/2010          | Victorian                                       |                                                                          |                |
|                   | 2       | 2006037156                           | WO                         | A1                     | 04/2006          | Mejia et al.                                    |                                                                          |                |

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|--------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
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| Application Number     | 17592143               |
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| Art Unit               | OPAP                   |
| Examiner Name          | UNKNOWN                |
| Attorney Docket Number | CONT-17321892          |

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to document  
/S.J.W./  
5/24/2023

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|--------------------------------------------------------------------------------------------------------|------------|----|----|------------|--------------|--|---------------------------------------|
| 4                                                                                                      | H0877468   | JP |    | 1996-03-22 | Keizaburo    |  | <input checked="" type="checkbox"/>   |
| 5                                                                                                      | H10162283  | JP |    | 1998-06-19 | Masahiro     |  | <input checked="" type="checkbox"/>   |
| 6                                                                                                      | EP1519625  | EP | A2 | 05/2010    | Victorian    |  | <input type="checkbox"/>              |
| 7                                                                                                      | 2006037156 | WO | A1 | 04/2006    | Mejia et al. |  | <input type="checkbox"/>              |
| 8                                                                                                      | EP1401240  | EP |    | 03/2004    | Jensen       |  | <input type="checkbox"/>              |
| 9                                                                                                      | 2008050583 | WO |    | 05/2008    | Kitada       |  | <input type="checkbox"/>              |
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| 12                                                                                                     | EP1385324  | EP |    | 01/2004    | Pedersen     |  | <input type="checkbox"/>              |
| 13                                                                                                     | EP1640972  | EP |    | 03/2006    | Dijkstra     |  | <input type="checkbox"/>              |
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| Art Unit               | OPAP                   |
| Examiner Name          | UNKNOWN                |
| Attorney Docket Number | CONT-17321892          |

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|                                       |   |             |    |         |          |  |  |
|---------------------------------------|---|-------------|----|---------|----------|--|--|
| to document,<br>/S.J.W./<br>5/24/2023 | 4 | JPH10162283 | JP | 06/1998 | Masahiro |  |  |
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|--------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|                    | 1       | Olwal, A. and Feiner S. Interaction Techniques Using Prosodic Features of Speech and Audio Localization. Proceedings of IUI 2005 (International Conference on Intelligent User Interfaces), San Diego, CA, Jan 9-12, 2005, p. 284-286.                                           |                |
|                    | 2       | Bernard Widrow, John R. Glover Jr., John M. McCool, John Kaunitz, Charles S. Williams, Robert H. Hearn, James R. Zeidler, Eugene Dong Jr, and Robert C. Goodlin, Adaptive Noise Cancelling: Principles and Applications, PROCEEDINGS OF THE IEEE, VOL. 63, NO. 12, DECEMBER 1975 |                |
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|                                                                                                     | Filing Date            |                        |  |
|                                                                                                     | First Named Inventor   | Steven Wayne Goldstein |  |
|                                                                                                     | Art Unit               | OPAP                   |  |
|                                                                                                     | Examiner Name          | UNKNOWN                |  |
|                                                                                                     | Attorney Docket Number | CONT-17321892          |  |

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|  | 31                                   | 20050058313 |  | 2005-03-17                       | Victorian, Thomas A.    |  |
|  | Change(s) applied                    |             |  |                                  |                         |  |
|  | to document,<br>P.H. 32<br>5/25/2023 | 20140122092 |  | 05/2014<br><del>2019-03-19</del> | Goldstein, Steven Wayne |  |

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|                        |                        |
|------------------------|------------------------|
| Application Number     |                        |
| Filing Date            |                        |
| First Named Inventor   | Steven Wayne Goldstein |
| Art Unit               |                        |
| Examiner Name          | Unknown                |
| Attorney Docket Number | CONT-17321892          |

|   |         |            |                  |
|---|---------|------------|------------------|
| 9 | 6023517 | 2000-02-08 | Ishige; Ryuuichi |
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|-------------------------------------------------------|---------|--------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|
| Change(s) applied to document.<br>/P.H./<br>5/25/2023 | 1       | 20170124847        |                        | 2017-05-04       | Schulz et al.<br><del>Sigh, LLC</del>           |                                                                          |
|                                                       | 2       | 20060253282        |                        | 2006-11-09       | Gerhard Uwe Schmidt et al.                      |                                                                          |
|                                                       | 3       | 20140185828        |                        | 2014-07-03       | Helbling<br><del>Collo Partnership</del>        |                                                                          |
|                                                       | 4       | 20020135485        |                        | 2002-09-26       | Kaoru Arakawa                                   |                                                                          |
|                                                       | 5       | 20100136950        |                        | 2010-06-03       | Erik Johan Vendel Backlund et al.               |                                                                          |
|                                                       | 6       | 20040179694        |                        | 2004-09-16       | Alley, Kenneth A.                               |                                                                          |
|                                                       | 7       | 20160249128        |                        | 2016-08-25       | Steven Wayne Goldstein                          |                                                                          |
|                                                       | 8       | 20070147635        |                        | 2007-06-28       | Dijkstra; Evert                                 |                                                                          |

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| Examiner Name          | UNKNOWN                |
| Attorney Docket Number | CONT-17321892          |

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|                                                          | 40 | 20110055256 |  | 2011-03-03                       | Phillips                              |  |
|                                                          | 41 | 20060182287 |  | 2006-08-17                       | Schulein                              |  |
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| Change(s) applied<br>to document,<br>/P.H./<br>5/25/2023 | 43 | 20060195322 |  | 08/2006<br><del>2007-04-19</del> | Broussard et al.<br><del>Boesen</del> |  |
|                                                          | 44 | 20060287014 |  | 2006-12-21                       | Matsuura                              |  |

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|------------------------------------------------------------|---------|--------------------------------------|---------------------------|------------------------|------------------|-------------------------------------------------|--------------------------------------------------------------------------|----------------|
| Change(s) applied<br>to document,<br>/S.J.W./<br>5/24/2023 | 1       | EP1519625                            | EP                        | A2                     | 03/2005          | Victorian                                       |                                                                          |                |
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|----------------------------------------------------------|----|-------------|--|----------------------------------|-------------------------|--|
|                                                          | 28 | 20100296668 |  | 2010-11-25                       | Lee et al.              |  |
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|                                                          | 31 | 20050058313 |  | 2005-03-17                       | Victorian, Thomas A.    |  |
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|                                                          | 34 | 20060173563 |  | 2006-08-03                       | Borovitski; Michael D.  |  |
|                                                          | 35 | 20090076821 |  | 2009-03-19                       | Brenner; Vadim          |  |
|                                                          | 36 | 20050281423 |  | 2005-12-22                       | Armstrong               |  |
|                                                          | 37 | 20030130016 |  | 2003-07-10                       | Matsuura                |  |
|                                                          | 38 | 20050207605 |  | 2005-09-22                       | Dehe                    |  |



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| APPLICATION NO. | ISSUE DATE | PATENT NO. | ATTORNEY DOCKET NO.      | CONFIRMATION NO. |
|-----------------|------------|------------|--------------------------|------------------|
| 17/592,143      | 07/25/2023 | 11710473   | 11472-27-5_CONT-17321892 | 3471             |

150139 7590 07/05/2023  
Akerman LLP  
777 South Flagler Drive  
Suite 1100 West Tower  
West Palm Beach, FL 33401

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The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at <https://patentcenter.uspto.gov/>. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

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#### **Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**

(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional inventors):

Steven Wayne Goldstein, Delray Beach, FL;  
John Usher, Beer, UNITED KINGDOM;  
Marc Andre Boillot, Plantation, FL;

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Staton Techiya LLC, Delray Beach, FL

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Akerman LLP  
777 South Flagler Drive  
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### EGRANT NOTIFICATION

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